Strategic Skills Initiative Shortage ID Report

Cover Sheet

Economic Development Region # 3 : Northeast Indiana

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REBUILDING OUR TECHNOLOGICAL HERITAGE

The Northeast Indiana Strategic Skills Initiative

Skills Shortages Report

November 4, 2005

NORTHEAST INDIANA WORKFORCE INVESTMENT BOARD

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Table of Contents

1. Introduction

The year: 1983.

Apple Computers introduced the Lisa personal computer, the first mass-marketed desktop with a graphical user interface (GUI) and precursor to the Macintosh.

Microsoft introduced Windows 1.0, its first attempt at a GUI model that eventually led to dominance of the global operating system market.

After selling 1 million units in the United States, Magnavox withdrew the Fort Wayne-developed Odyssey^2 video-gaming system from the U.S. market. Perhaps the most technically-powerful system in the industry at the time, Magnavox could not compete with systems manufactured by Atari and Mattel.

International Harvester closed its Fort Wayne, Indiana plant, symbolizing the beginning of the end of the industrial economy in Northeast Indiana as we knew it.

The year: 2000

The Northeast Indiana Innovation Center was created, signifying the reengagement of Northeast Indiana into the global knowledge economy.

The year: 2005

Apple reported FY2005 revenue of $13.9 billion.

Microsoft reported FY2005 revenue of $39.8 billion.

Video gaming has grown into an industry with over $13 billion in worldwide sales – a larger entertainment industry than motion pictures.

Northeast Indiana has a lot of catching up to do.

2. Executive Summary

Northeast Indiana is an economy in transition. Global economics has forced our region to shed the less competitive elements of its historical industry base, auto parts manufacturing, over the last 20 years. Sadly, the region has not found a replacement driver industry, and the vast majority of our current employment growth is taking place in service-sector industries where wages struggle to keep pace with self-sufficiency levels. Overall job growth in our region lags well behind the state, the Midwest and the country, and Indiana Workforce Development projects that our short-term rate of job growth to be among the lowest in the state. With the loss of our high-paying manufacturing work and its replacement by low-wage, service-sector jobs, Northeast Indiana's economy has quietly slipped into a depressed condition.

There is no quick fix to this problem. Our workforce is well suited to the needs of the evaporating post-World War II industrial economy, but it has not embraced the fundamentals of the knowledge-based economy outlined in Thomas Friedman's "The World is Flat."

Within these wrenching systemic changes, however, there are pockets of optimism and hope – seeds we wish to grow through the Northeast Indiana Strategic Skills Initiative. Those key areas are health care, advanced manufacturing and a cross-cutting trend toward all industries using information technology to improve their performance and competitiveness.

Our health-care delivery network of regional health systems, community hospitals, physician practices and long-term care facilities is growing and generating some wealth for our region from beyond our borders. But our region is facing a critical shortage of registered nurses – over 2,300 – to accommodate anticipated industry growth and replacement of those who retire and leave the profession. These are good-paying jobs worth supporting not just for the income potential they generate but also to ensure the level of care we all expect from our premier health institutions.

Within the harsh landscape of manufacturing, technological innovation offers smart companies the capacity to not only survive but grow in an age when we expect to hear more about outsourced jobs than plant expansions. This tech-savvy, growth-oriented advanced-manufacturing industry requires more from its workers than just willing hands and strong backs; it needs sharp minds. It needs multi-taskers on the shop floor to self-manage its workspaces for optimum output. And it needs applied engineers to integrate together many production and profitability factors to achieve once unheard of operational goals. We make metal and plastic products in Northeast Indiana that rival the world's, and the growth potential in this core regional proficiency should be supported as long as it is viable.

Lastly, our research uncovered a cultural shift across Northeast Indiana – a widespread acceptance of the need to integrate the many forms of technology into fundamental operations. From health informatics to global logistics and supply-chain management to integrated CAD-CNC programming and beyond, employers are looking to technology as a means to improve production and achieve service goals. It takes a skilled workforce to achieve these important, systemic improvements. That workforce does not exist at present. While not the greatest number of jobs to be created, this element of the Northeast Indiana Strategic Skills Initiative is perhaps the most critical because it will be a stimulus to help our region get back on its feet again. These knowledge workers will enable us to complete the transition to a flat world.

A dynamic group of thoughtful, creative minds representing the best that our region has to offer led our Northeast Indiana Strategic Skills Initiative. They embraced the spirit of a demand-driven approach to workforce planning. Only by understanding our demand can we offer solutions to meet those needs. We set out on an exhaustive (and exhausting!) process where we engaged economic development and industry leaders in each of our 11 counties, gathering their insights and growing a regional appreciation for workforce skills demand. We deliberated in an inclusive process, ensuring that every voice was heard. From those many voices came one vision, it is presented within.

The Northeast Indiana Strategic Skills Initiative will not be the universal solution to every workforce problem facing our region, nor was it intended to do so. It will focus on four key skill shortages:

- Registered nurse certifications, especially at the advanced levels
- Manufacturing equipment operation and maintenance skills integration
- Applied industry systems knowledge for our industrial engineers
- A deeper integration of information technology capacity across our region

If we do our work well, we will not only fix four key shortage areas but also change the way we look at workforce planning. We believe that the Northeast Indiana Strategic Skills Initiative will set a template for future planning efforts by integrating meaningful data analysis into our decision making, actively soliciting demand-driven insights in the planning process and systemically attacking these shortages at the root-cause level. And this will all take place within an inclusive, regional program of work.

While we have hope, we are realists. It will take time for Northeast Indiana to emerge from its current state. But together, with a shared understanding and clear purpose forged through consensus, we can make our region thrive and grow once again.

Patricia P. Weddle
Core Agent, Northeast Indiana Strategic Skills Initiative
Economic Growth Region 3
November 2005

3. Overview of Northeast Indiana SSI Project

3.1. Introduction to Northeast Indiana

For the Strategic Skills Initiative (SSI), Indiana has been divided into 11 "Economic Growth Regions" (EGRs). Economic Group Region 3 (EGR-3) contains Adams, Allen, DeKalb, Grant, Huntington, LaGrange, Noble, Steuben, Wabash, Wells and Whitley counties. EGR-3, as defined by Indiana Workforce Development (IWD), contains 11 counties with a total estimated 2004 population of 738,795.[1]

The current population estimate for EGR-3 is 738,795 which is approximately 11.8 percent of Indiana's total population.

EGR-3 grew just slightly faster than the state between 1990 and 2000 (9.8 percent growth compared to a statewide rate of 9.7 percent).

Population projections prepared by the Indiana Business Research Center (IBRC) suggest that by 2020 EGR-3 will have a total population of 787,118 or approximately 11.7 percent of the state's projected population in 2020. It is expected that this population will be geographically distributed across the region in a manner similar to that found today.

[1] A brief statistical profile of EGR-3 can be found at: http://www.stats.indiana.edu/profiles/custom_profile_frame.html?SEGR_3. All unattributed statistics and graphic displays of those statistics in this section were drawn from tools provided at http://www.stats.indiana.edu/ssi/.

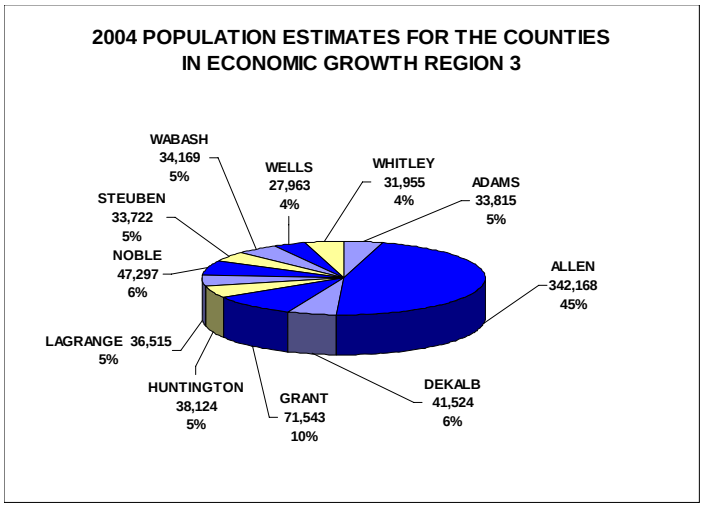
EGR-3 contains approximately 11.9 percent of Indiana's 2004 employment.

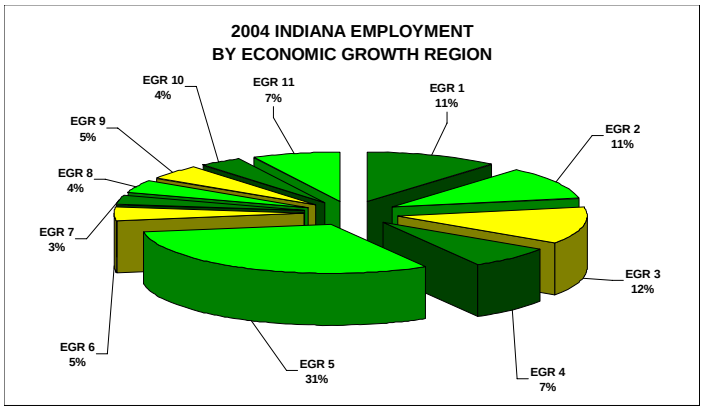
The August 2005 unemployment rate for EGR-3 was reported at 5.4 percent, compared with a statewide rate of 5.2 percent.

Over the past ten years (1994-2004) total employment in EGR-3 has increased by 2,191 (338,220 to 340,411). The region has also experienced a very modest rate of growth, 0.6 percent, over this time period compared with the national employment growth rate of 14.9 percent.

Over the same time period Indiana total employment increased by 7.8 percent.

By comparison, in EGR-5 (Marion County and the eight "collar" counties) total employment grew by 13.8 percent.

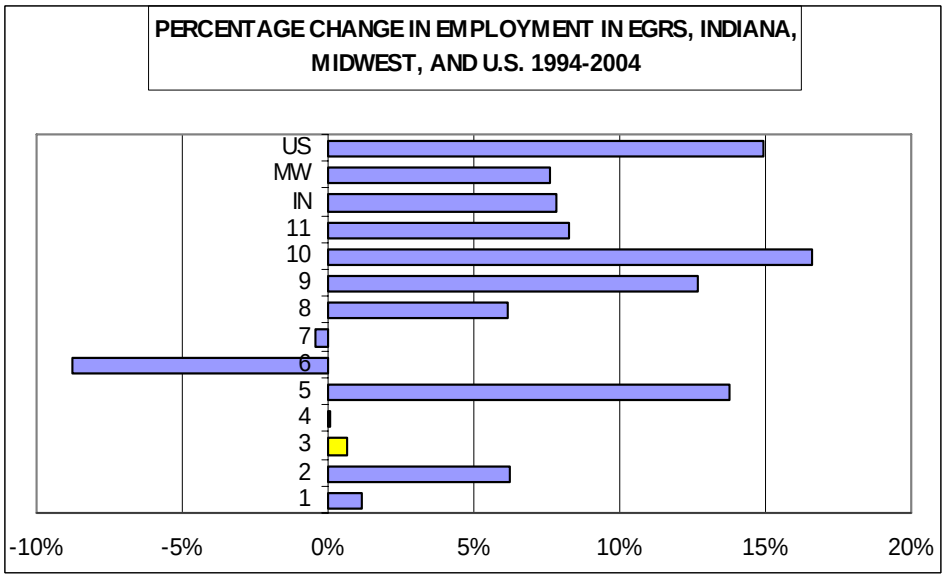




The Northeast Indiana EGR now lags many other regions of the state in economic performance:

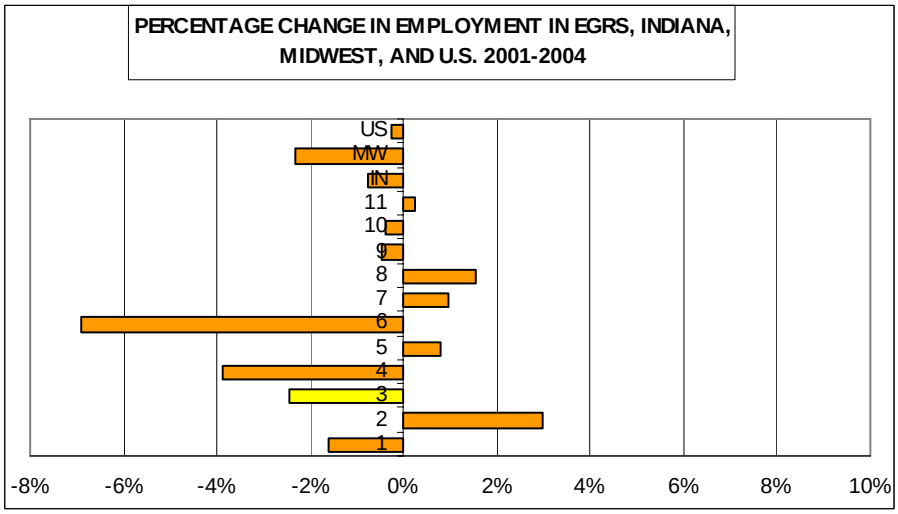
- Between 1994 and 2004, EGR-3's percentage growth in employment was eighth out of the 11 EGRs.

- In the 2001-2004 time period, EGR-3 ranked

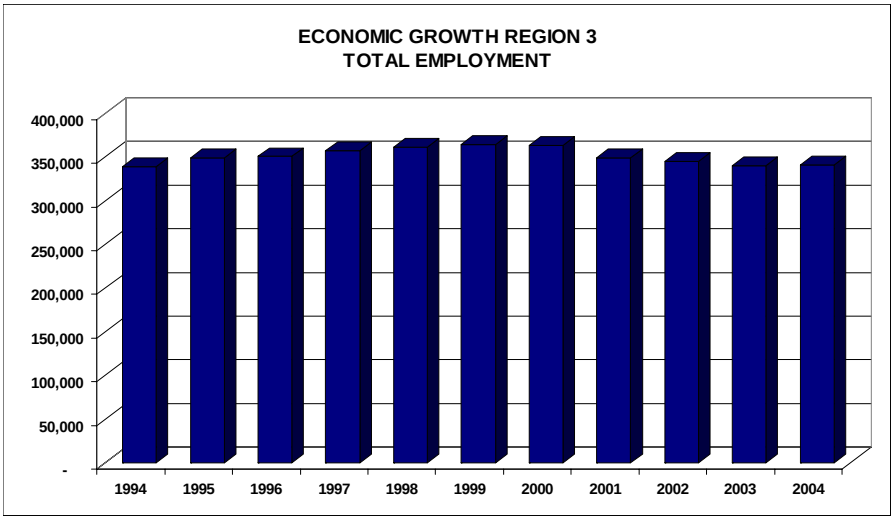


ninth out of 11 in percentage employment growth.

- In the 2001-2004 time period, EGR-3 ranked last of all EGRs in percentage change in average wage per job.



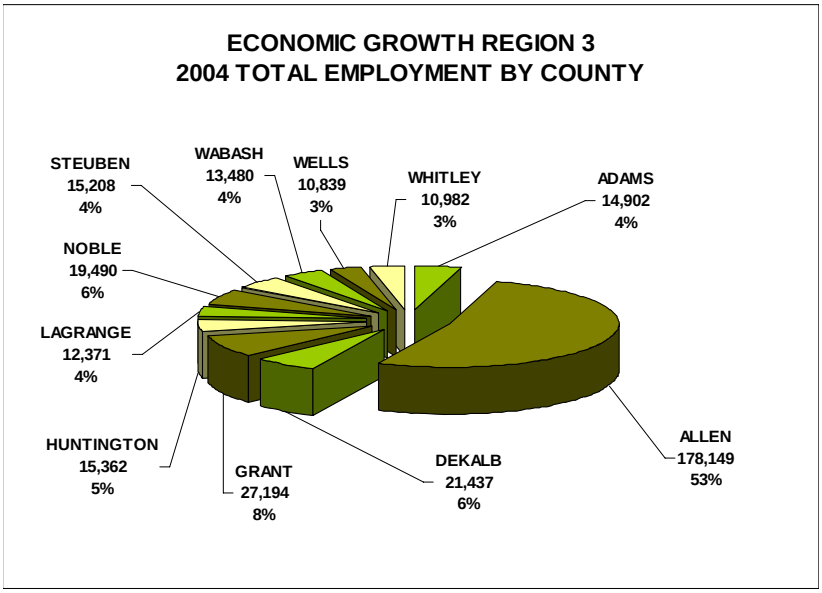
Total employment in EGR-3 reached a peak of 363,114 in 1999 but dropped to 339,323 in 2003. (Employment data from the U.S. Bureau of Labor Statistics [BLS] QCEW files)

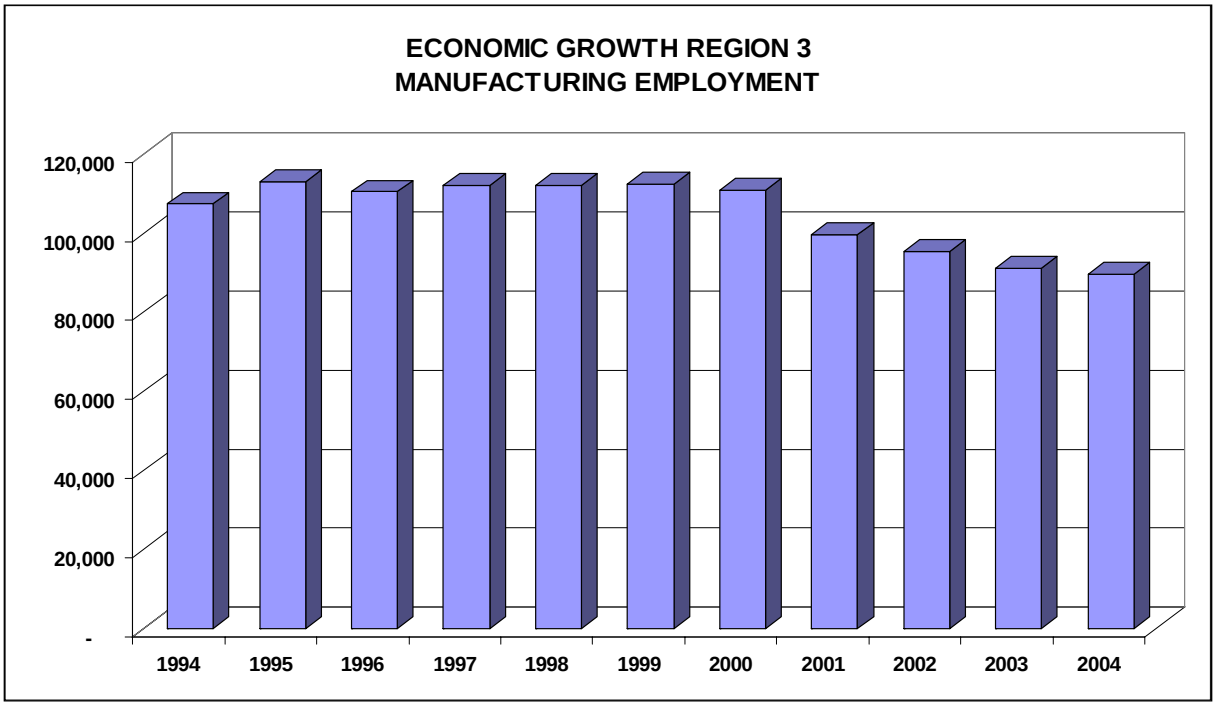


Total employment in the region grew by 1,088 in 2004, hopefully signaling a bottoming of the recent economic downturn and the start of an employment recovery.

However, manufacturing employment, the historic base of the Northeast Indiana economy, continued to lose jobs (-1,470) in 2004.

During the 1994-2004 timeframe, manufacturing employment in EGR-3 peaked at 112,238 in 1999 and has fallen every year since. The 2004 average annual employment in





manufacturing represents a drop of 22,864 jobs (20 percent) over the last five years.

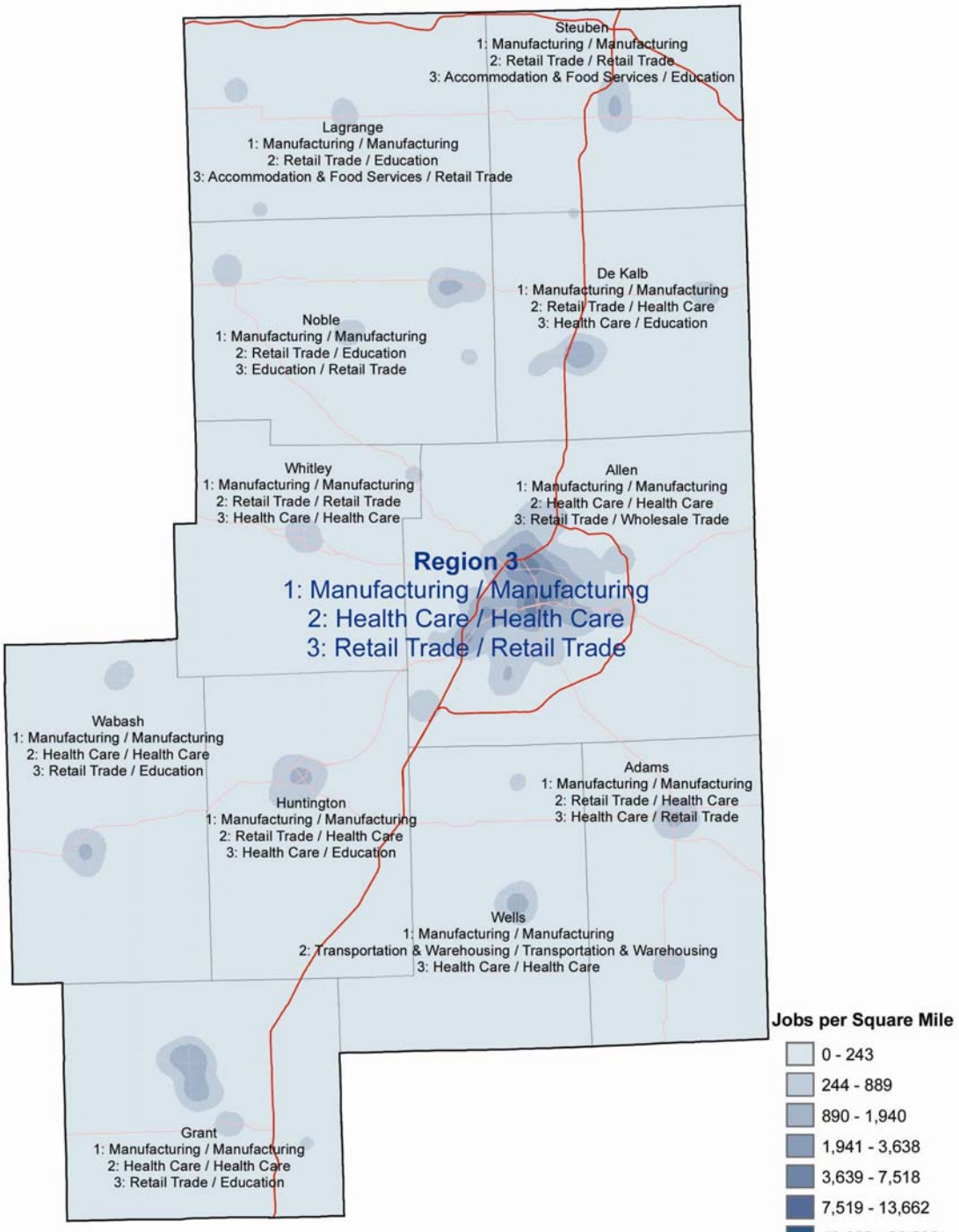
Within Allen County there were 10,618 fewer employed in manufacturing in 2004 than in 1997. Within the other 10 counties in EGR-3, there were 11,930 fewer employed in manufacturing in 2004 than in 1997.

The economy of Northeast Indiana has long been dominated by the manufacturing sector. The concentration of employment and wealth creation associated with this sector has historically been very good to the region.

"Northeast Indiana's dependence on manufacturing is reflected in its low industrial diversity. Industrial diversity is a measure of the extent to which an area is insulated from a sharp downtown in one of its top industries. The measure looks at 14 different industrial sectors, separates the top three based on total employment, and then calculates the total employment distribution of the remaining sectors."[2]

[2] Corporation for a Skilled Workforce. "Northeast Indiana: Preparing for the Future," Jan., 2005, p. 3.

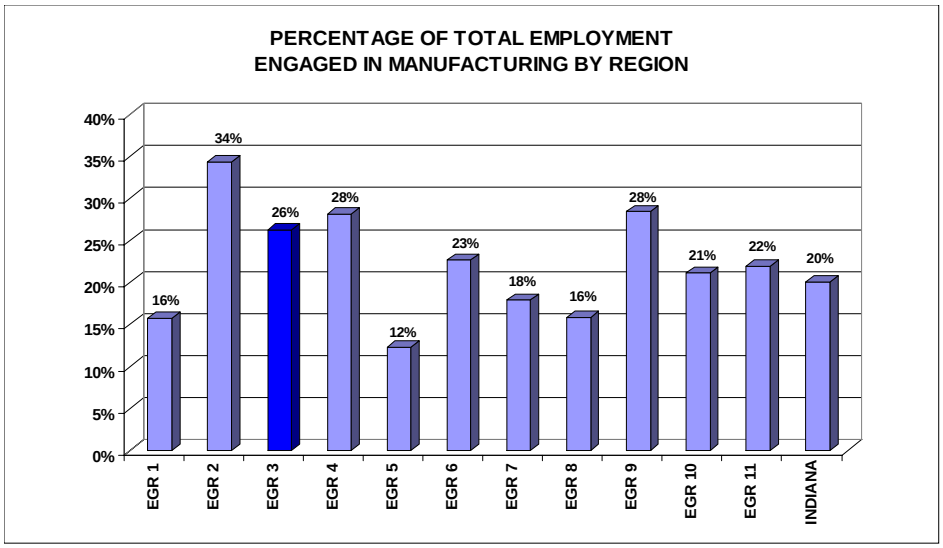
Top Industries by Employment and Wages



The industrial diversity Index for Northeast Indiana (Wabash County was not included in this calculation) was 24.1 percent; Indiana's 25.5 percent and the United States was 28.4 percent.

Of the 11 EGRs, EGR-3 has the fourth-highest concentration of employment engaged in manufacturing at 26 percent. Indiana, in total, has 20 percent of its total employment directly tied to manufacturing. Nationally, in 2004, manufacturing represented 11.1 percent of total employment.

In 2004, 16.6 percent of Allen County employment was in manufacturing. 36.9 percent of employment in the remaining 10 counties in EGR-3 was engaged in manufacturing.



In 2004 EGR-3 had eight three-digit NAICS-code industry categories that employed at least 10,000 workers within the region:

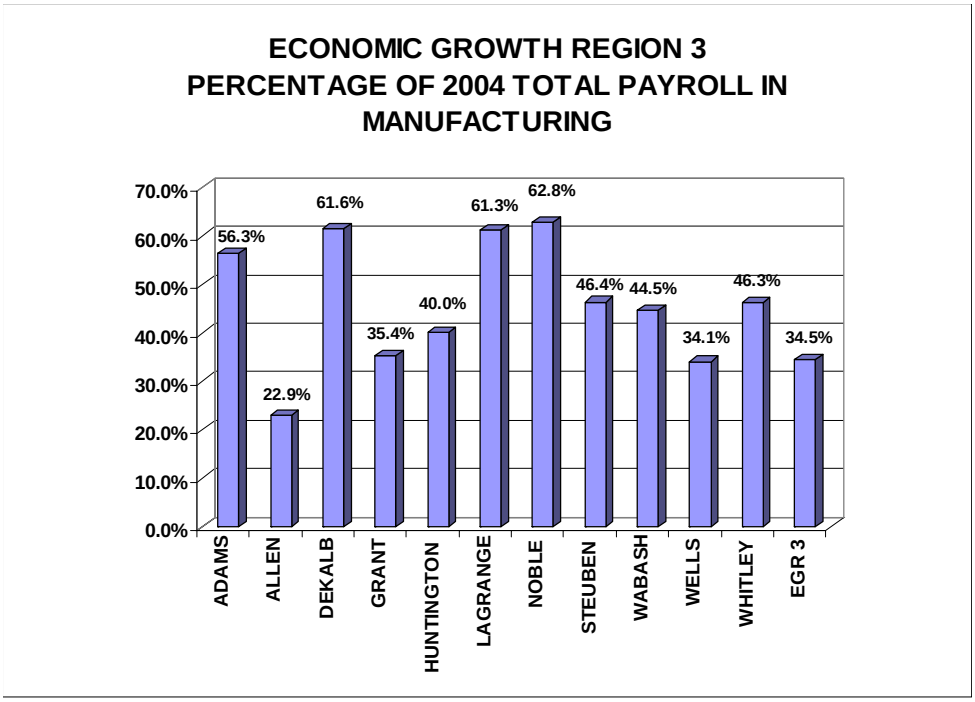
Food Services and Drinking Places	25,441
Educational Services	24,423
Transportation Equipment Manufacturing	19,936
Hospitals	15,693
Administrative and Support Services	14,165
Ambulatory Health Care Services	12,049
Fabricated Metal Product Manufacturing	11,566
Specialty Trade Contractors	10,325

In 1994, three additional industry categories also employed over 10,000 workers but have dropped from that threshold in the past 10 years:

- Merchant Wholesalers, Nondurable Goods
- Plastics and Rubber Products
- Computer and Electronic Product Manufacturing

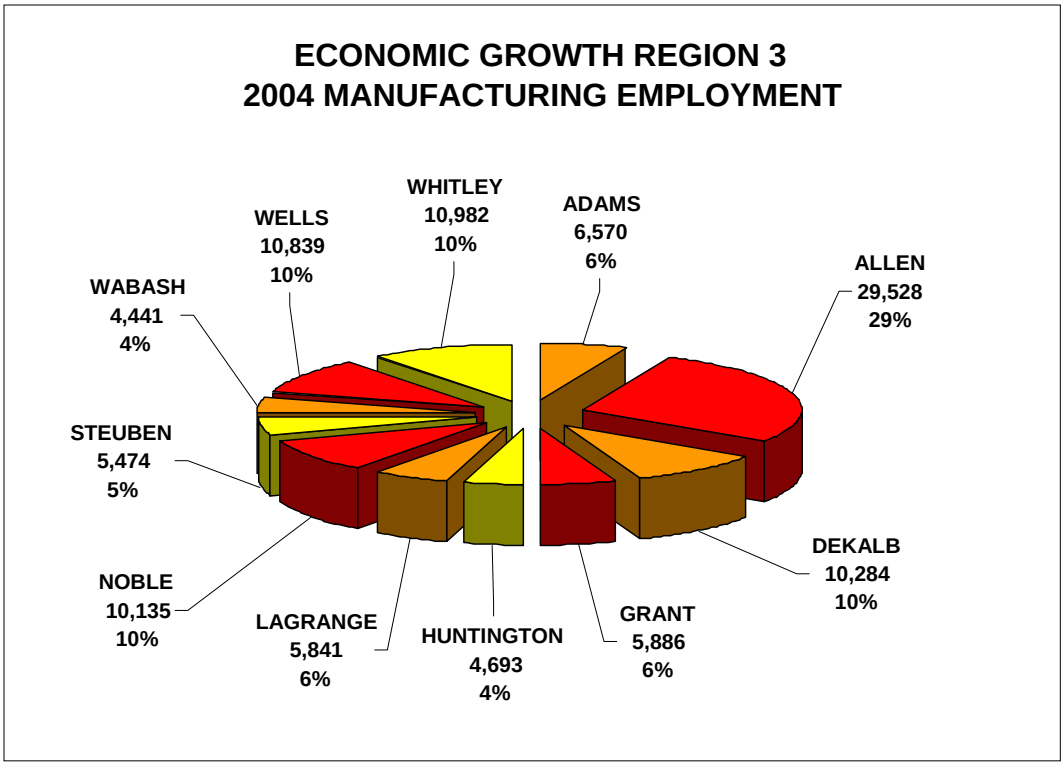
Two health-care categories, Ambulatory Health Care Services and Hospitals, did grow into the 10,000 employee category over that 1994-2004 time period.

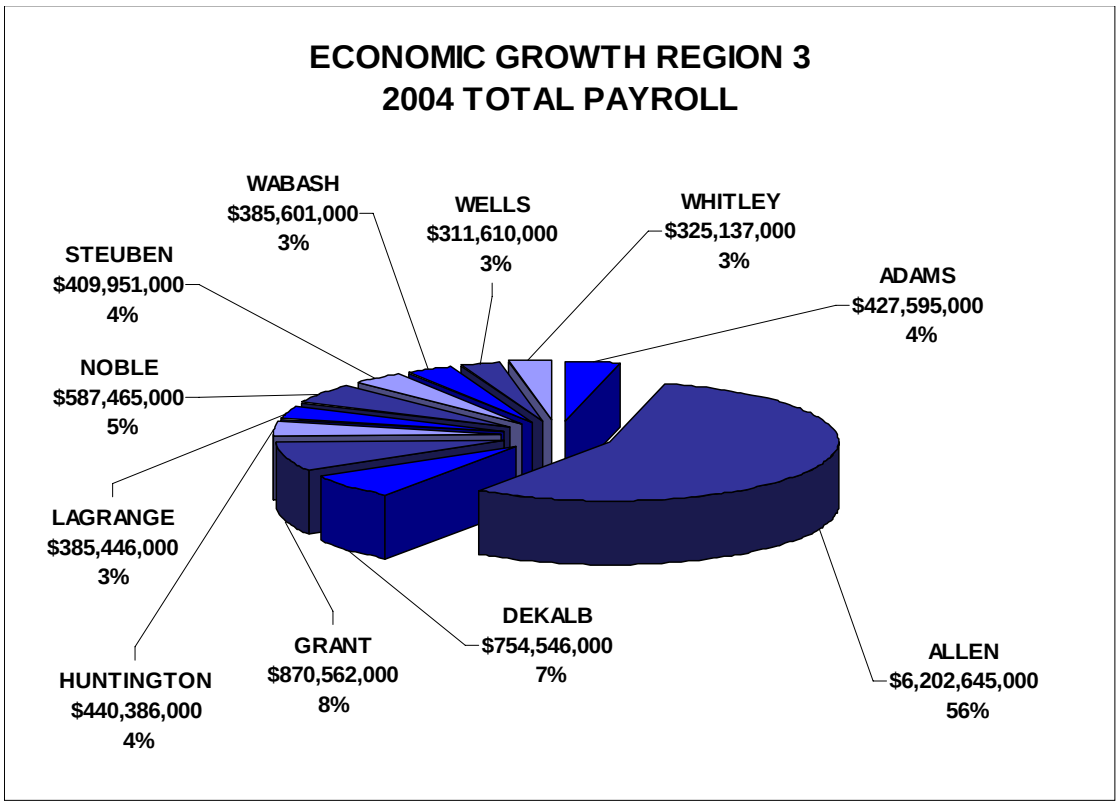
Section 10.2. includes a listing of all EGR three-digit NAICS-industry categories with both 1994 and 2004 average annual employment totals arranged by average weekly pay per category.

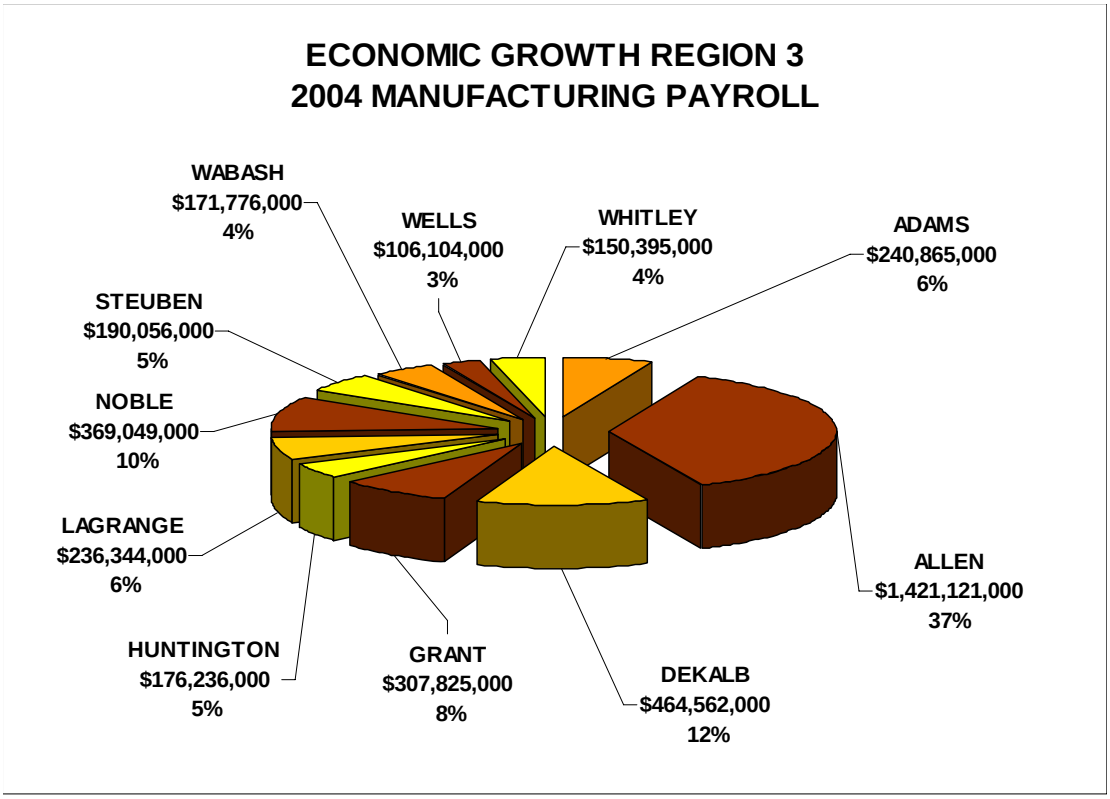


Between 1994 and 2004 average annual wages per job in EGR-3 grew by 35 percent compared with national growth of 45.8 percent over the same period.

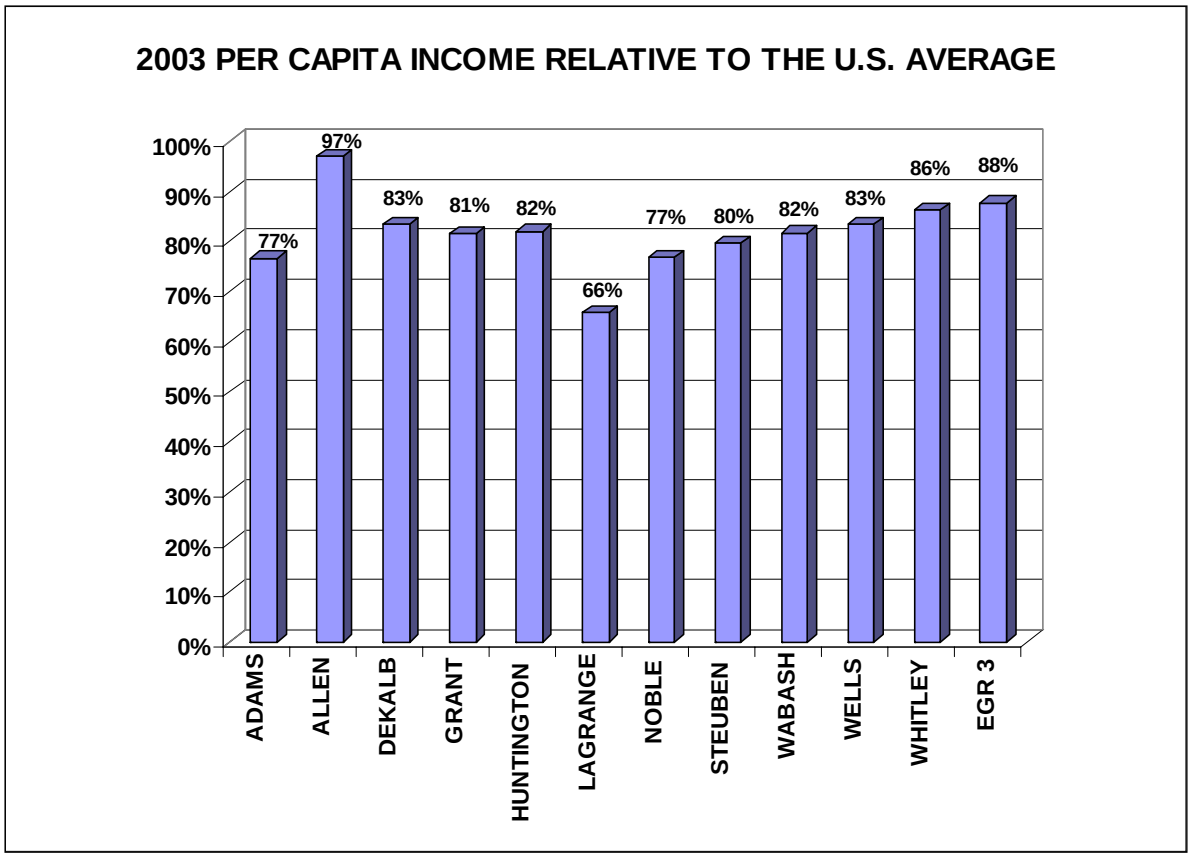
In the manufacturing sector, average annual wages per job grew by 36.9 percent in EGR-3 compared with national growth over the 1994-2004 period of 47 percent.




ECONOMIC GROWTH REGION 3
2004 TOTAL PAYROLL
WABASH
$385,601,000
3%
WELLS
$311,610,000
3%
WHITLEY
$325,137,000
3%
STEUBEN
$409,951,000
4%
ADAMS
$427,595,000
4%
NOBLE
$587,465,000
5%
LAGRANGE
$385,446,000
3%
HUNTINGTON
$440,386,000
4%
GRANT
$870,562,000
8%
DEKALB
$754,546,000
7%
ALLEN
$6,202,645,000
56%


ECONOMIC GROWTH REGION 3
2004 MANUFACTURING PAYROLL
WABASH
$171,776,000
4%
WELLS
$106,104,000
3%
WHITLEY
$150,395,000
4%
ADAMS
$240,865,000
6%
STEUBEN
$190,056,000
5%
NOBLE
$369,049,000
10%
LAGRANGE
$236,344,000
6%
HUNTINGTON
$176,236,000
5%
GRANT
$307,825,000
8%
DEKALB
$464,562,000
12%
ALLEN
$1,421,121,000
37%

Per capita personal income is one measure to judge the economic wellbeing of a given geographic region. Personal income is composed of three elements: 1) earnings; 2) dividends, interest and rent; and 3) transfer payments such as Social Security and unemployment compensation. As the following chart illustrates, all counties in EGR-3 lag far below the average U.S. per capita income of $31,472. Recent work undertaken by Morton Marcus, Director Emeritus of the IBRC, suggests that statewide this lag is due primarily to the first of the three above-noted components – the failure of our wages to keep pace with national rates.

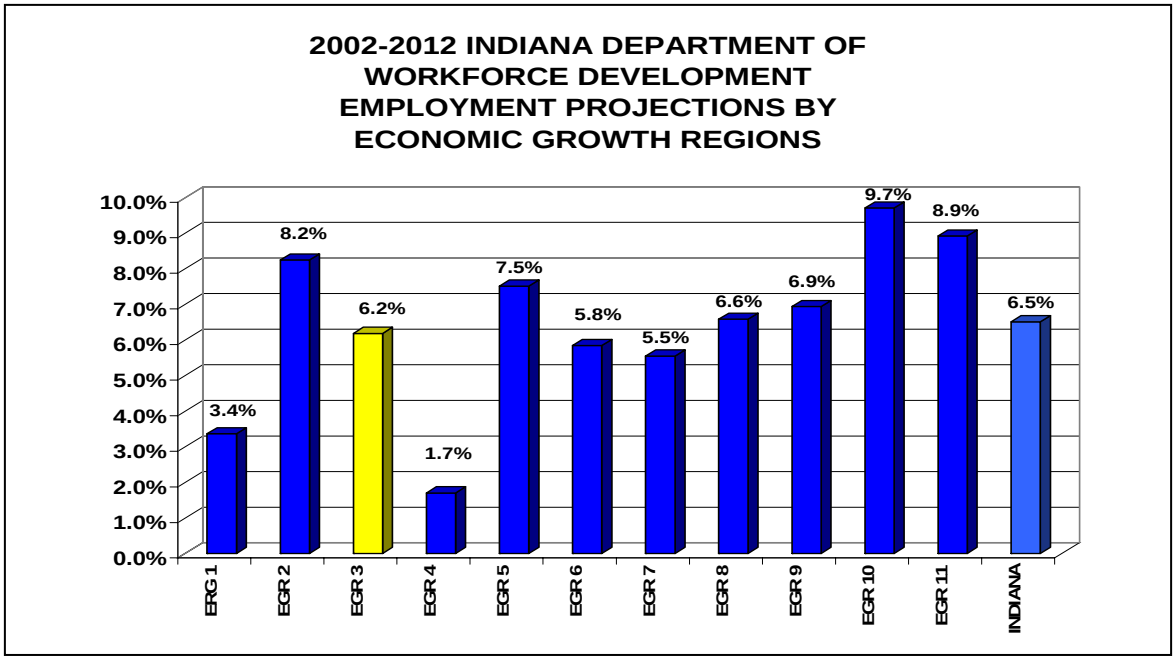


SSI places significant importance on supporting "high-growth" industries. IWD has prepared a set of detailed industry and occupation projections for each of the EGRs. The Department used 2002 as the base year for the projections and 2012 as the target year.

The 2002-2012 industry and occupation growth projections provided by IWD indicate that EGR-3 will have 10 three-digit NAICS-industry categories that will experience net job growth in excess of 1,000 employees over that 10-year period. These categories include:

Educational Services	5,470
Ambulatory Heath Care Services	3,820
Administrative and Support Services	2,470
Social Assistance	2,180
Food Services and Drinking Places	1,920
Nursing and Residential Care Facilities	1,830
Plastics and Rubber Manufacturing	1,720
Furniture and Related Product Manufacturing	1,690
Primary Metal Manufacturing	1,550
Hospitals	1,150

Among the 11 EGRs, EGR-3 is projected to have the eighth-highest percentage increase in total employment between 2002 and 2012.

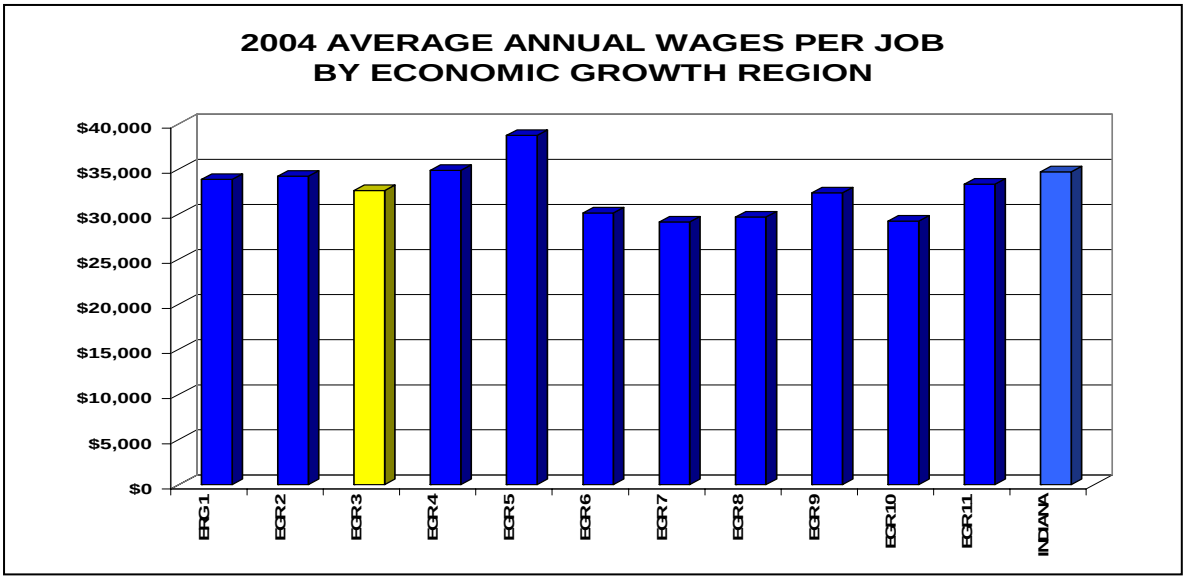


The 2002 base-year employment for EGR-3 utilized by IWD in their 2012 projection of employment by industry was 4.9 percent (17,845) above the total of actual annual average employment in 2002 for the region (as reported by the BLS for all covered employment).

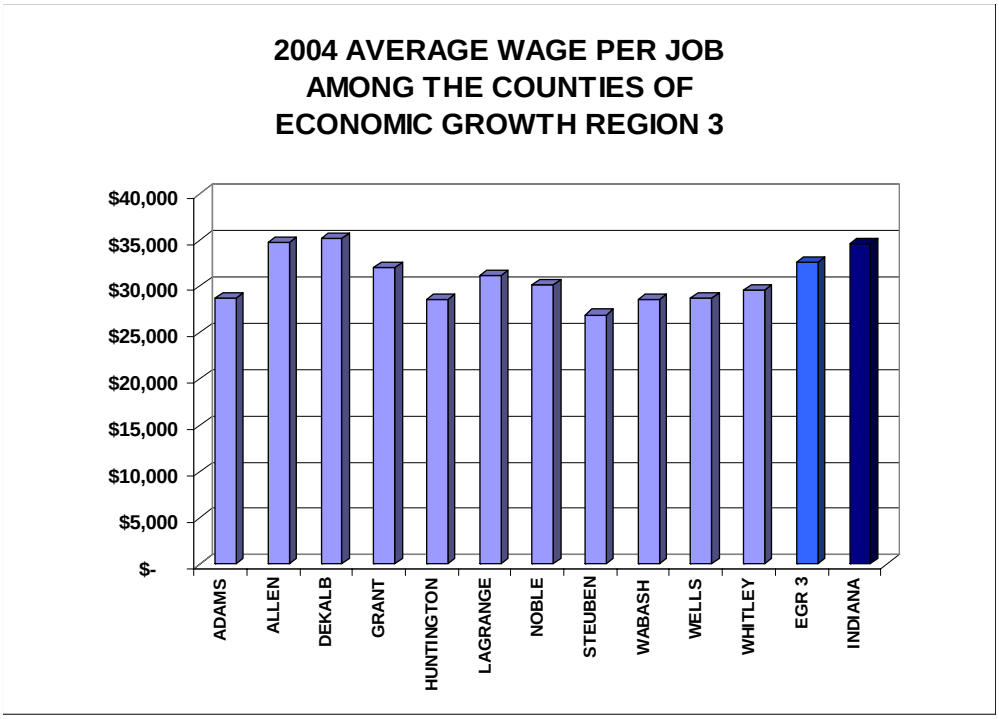
SSI also places great importance on “high wage” jobs. Thus, it is important to have an understanding where the region is currently situated relative to average annual wages as report by the BLS.

In 1994, EGR-3 ranked fourth in average annual wages per job among all 11 EGRs. By 2004 our region had dropped to sixth place.

In 1994, average annual wages per job in EGR-3 were 3.2 percent below the statewide average. By 2004, our average wages were 5.9 percent below the statewide average.

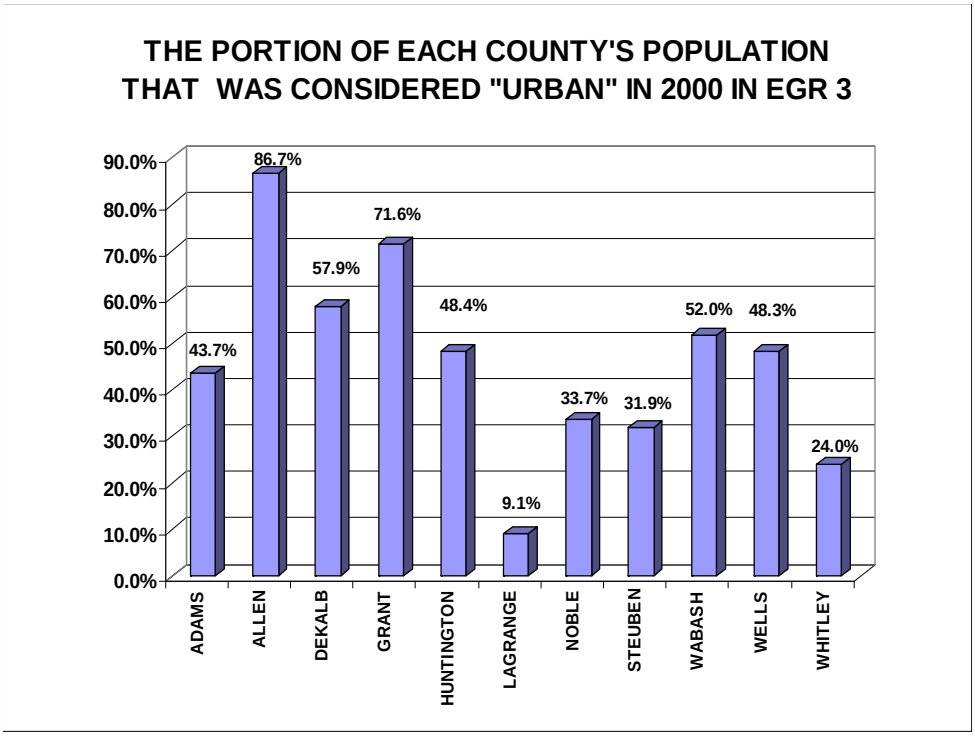


There is also substantial variation in the average annual wage per job among the counties that comprise EGR-3. In 2004, De Kalb County had the highest average wages per job at $35,198; followed closely by Allen County at $34,817. Wabash County had the lowest average wages per job in 2004 at $28,605. The average for the EGR-3 was $32,618.



There are many factors that tie the counties in EGR-3 together, such as commuting patterns for work, shopping, services and entertainment. However, it is also important to note that there are some very significant differences among the 11 counties that

comprise the region. Perhaps no other statistic illustrates this variation between than the percentage of the population in each county which was considered to be rural or urban in 2000. On one end of the spectrum LaGrange County was 9.1 percent rural and at the other end Allen County was 86.7 percent urban. Such wide disparities have tremendous influence on local public policy and community philosophy. Planning and implementation of SSI must always remain cognizant of these variations.

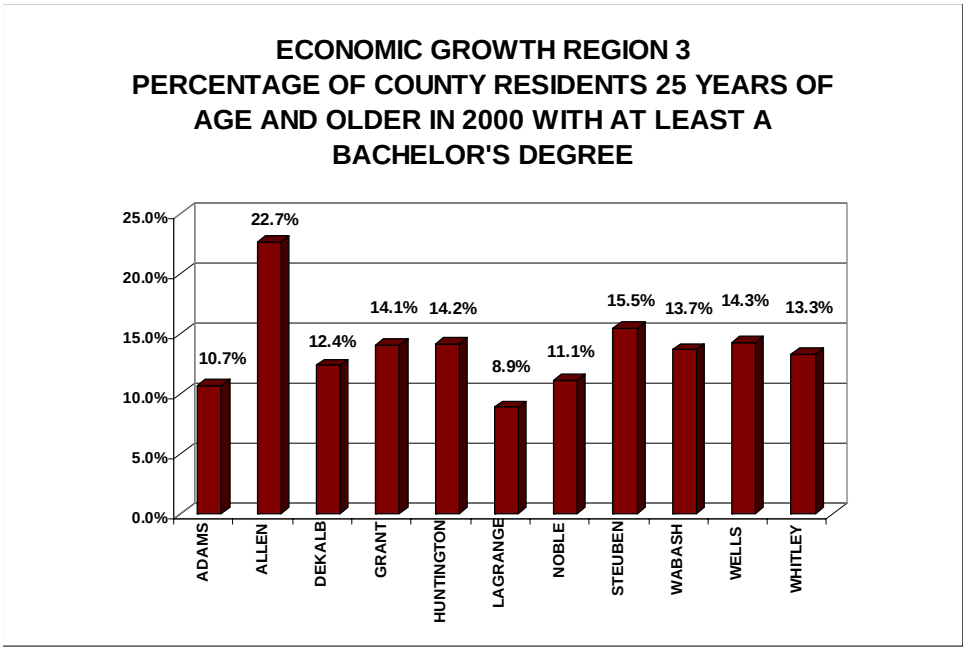


Current levels of educational attainment among the adult population are important baseline information when attempting to understand and tailor workforce development programs. As noted in the report "Northeast Indiana: Preparing for the Future," the Corporation for a Skilled Workforce noted:

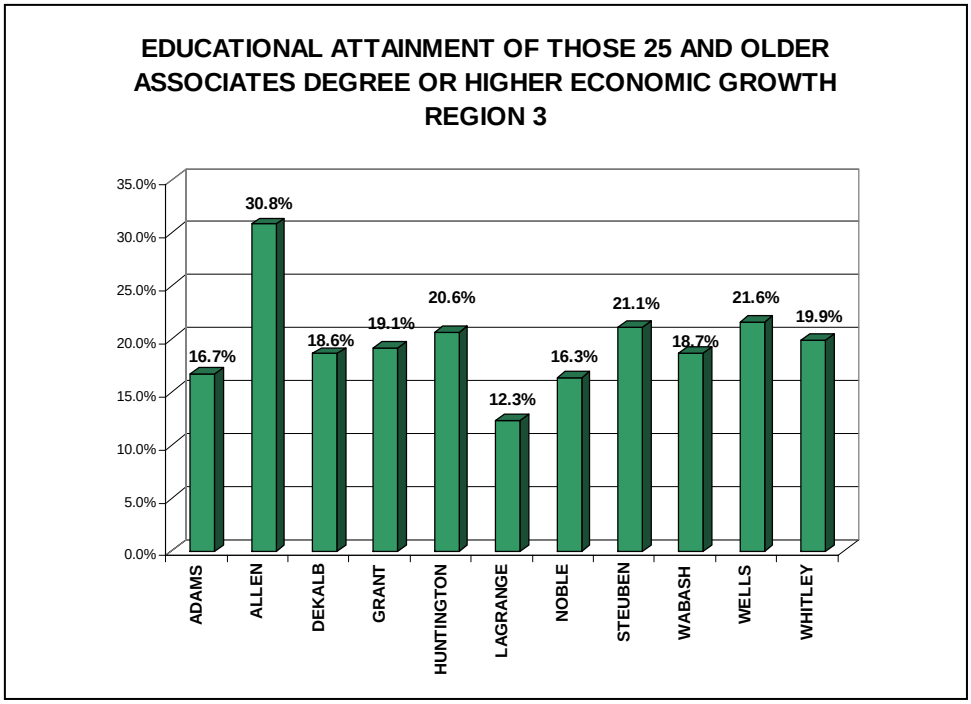
> "Employers seeking to locate or expand in an area are concerned with the educational attainment levels of the workforce. While education levels don't necessarily equate with skills or with having the right degrees or certifications for the kinds of jobs available, they do provide some indicator of whether the capacity exists to help the firm grow and change with the increasing demands of global competition.
>
> Northeast Indiana has a lower rate of individuals with bachelor's degrees or above, and a lower rate of individuals with associate's degrees or above than the state average. Indiana has traditionally been a low educational attainment state, despite its many fine postsecondary institutions. The attainment rates are lowest in LaGrange County, possibly because of its concentration of Amish communities. Allen County is largely responsible for the regional average being as high as it is." [3]

[3] "Northeast Indiana: Preparing for the Future." Jan. 2005, p. 10.

Northeast Indiana historically has had a lower portion of its adult population educated at the bachelor's degree or above level. Based upon information from the 2000 Census, nationally 24.4 percent of the adult population (age 25 or older) had at least a bachelor's degree. No county in EGR-3 had reached that level of educational attainment, with Allen County being at the highest level at 22.7 percent. The Indiana attainment level was 19.4 percent.



Based upon information from the 2000 Census, nationally 30.7 percent of the adult population (age 25 or older) had at least an associate's degree. Only Allen County exceeded the national average in EGR-3 in 2000 at 30.8 percent. The Indiana attainment level was 25.2 percent.



3.2. Philosophy of the Northeast Indiana SSI project

The initial guidelines received from IWD indicated that the SSI process itself was important as an operational model for future workforce programming. To that end, we built an operating philosophy around the following concepts (in no particular order of importance):

- **Region-wide planning:** SSI must be a program that actively solicits involvement from every county in Northeast Indiana. Our Lead Team and Consortium were created with this in mind. Subsequent Local Economic Development Officials (LEDOs), Chamber and industry-specific outreach also intentionally sent us to every corner of Northeast Indiana. And we believe that our targeted skill and occupation areas represent areas of need across the region.

- **Traded clusters:** We believe that SSI should be used to support those industries and clusters that are "traded" – those that generate new wealth for the region as opposed to recirculating existing wealth. The general weakness of the Northeast Indiana economy made this a challenge. Section 10.1. demonstrates that the location quotients (LQs) of a number of industries are very strong – specifically three industries have LQs over 4.0, meaning that Northeast Indiana has an overwhelming preponderance of transportation equipment manufacturers, plastics and rubber products manufacturers and primary metal manufacturers in comparison to the national average. All of these clusters are traded, giving us a foundation from which to work.

- **Reactive/Proactive planning:** Following the SSI planning windows of two- and seven-year results-oriented strategies, the SSI project demands a degree of both reactive and proactive planning. The underlying vulnerabilities of the current Northeast Indiana economy lead us to believe that a disproportionate amount of our effort should be focused on proactive planning.

- **Data justification for decisions:** While we quickly recognized that data alone was insufficient to drive our decisions related to SSI, we acknowledge that use of appropriate data sources to justify or dispel our expert-driven insights is critical.

- **Economic development and business partnerships:** SSI presents a unique opportunity to further build strategic ties with our region's LEDOs, Chambers of Commerce and the Northeast Indiana Corporate Council. LEDOs, as active recruiters and retention experts for our communities, have a need for workforce initiatives to align with their strategic goals. Chambers, as enhancers of community quality of life and providers of institutional business leadership in their respective communities, have an ongoing, vested interest in the quality of the workforce. The Corporate Council, as one of the select business organizations with a regional

mission, buttresses SSI in advancing a broader outlook that extends beyond any single county's boundaries. We believe that SSI will be most effective when aligned with our partners' activities and structured through the investigative phases to accent this philosophy.

- **Skill flexibility is critical:** No one can predict exactly what the future will look like. Therefore, it is important for all workers to have a broad set of skills that can be applied in a variety of environments. Where possible, we promoted occupations and skills that emphasized this philosophy.

- **SSI as a tool and not an end:** The scarcity of sophisticated regional economic development planning in Northeast Indiana has given the public the impression that SSI is the only program that could serve their communities or industries. This perception of scarcity is incorrect. We look at SSI as a program to meet identified skills shortages. We also view it as a model for future workforce planning. Information gathered during this process, but not acted upon in this project, will be used for future planning efforts.

- **Lifelong Learning:** Just as we embrace the notion that one never stops learning over the course of a lifetime, we have found that we are continuously learning over the course of this project. Every day, we find a new piece of meaningful data, have a conversation that offers further insight or come across a vital new piece of secondary data. With this learning, our opinions grow and develop. It is likely that they will continue to develop as SSI continues; we may adjust our findings to reflect that new knowledge.

4. Process and Methodological overview

Insofar as the nature of this project is to build a regional capacity to develop innovative, data-intensive solutions to demand-driven workforce issues, it is important to detail our approach to this project – from both the process perspective and analytical methodological point of view. This section explains how we developed our program of work and details the influences that led to our final conclusions.

4.1. Community Project Leadership

The Northeast Indiana SSI project relied on its community leadership for strategic direction within the organizational framework outlined by IWD in its June 2005 SSI overview and request for applications. The members of our community leadership include:

Lead Team

- Tom Braun, Northeast Indiana Central Labor Council
- Keith Davis, STAR Wealth Management
- Aaron DeWeese, Marion-Grant County Chamber of Commerce
- Kirk Kemmish, Northeast Indiana Corporate Council
- Dave Koenig, Region III-A Economic Development District & Regional Planning Commission
- Jon Myers, Indiana Economic Development Corporation
- Michael Ottenweller, Ottenweller Company
- Mike Ripley, Adams County Economic Development Corporation
- Eric Walts, Bradner Village Health Care Center
- Dean John Wellington, Indiana University-Purdue University Fort Wayne School of Business

Consortium

- Deb Conklin, Indiana University-Purdue University Fort Wayne
- Dr. Jeff Hendrix, Whitko Community School Corporation
- Garry Jones, Wells County Economic Development
- Mike Landram, Greater Fort Wayne Chamber of Commerce
- Rob Pearson, Wabash County Economic Development Corporation
- Lincoln Schrock, Indiana Northeast Development
- Dennis Silkworth, Northeast Indiana Central Labor Council
- Deb Stam, Parkview Health
- Lisa Stefanko, Dean Foods

Following the principles of organizational management expert, John Carver (especially from his book, “Boards that Make a Difference”), SSI community leadership was offered

every opportunity, as a group, to guide and direct staff activity. Staff was relied upon to implement their strategic directives.

4.2. Initial Approach – A data-driven exercise

A critical component of the SSI process is the identification of "**key industries**" within each region of Indiana. These are industries which either are or have the future potential to "drive" the regional economy.

Concurrently, the charge is to identify those "**key industries**" that also contain "**high-growth**" and "**high-wage**" companies and to subsequently identify those skills and occupations which are both **critical to the success** of these companies and for which **existing and projected shortages** are identified.

Northeast Indiana, as much of the entire state, is in a long-term economic transition – moving from an economy dominated by manufacturing production, jobs and wages.

Most would contend that manufacturing production will continue to be a core element of this region's economic base. The real question is how much of a job and wage "leader" will it be in the years ahead?

The following "10,000-foot" analysis clearly illustrates this question.

For the average wage per job, location quotient, and shift-share analysis interactive worksheet provided by the IBRC; there were 84 three-digit NAICS categories for which complete data for 2001 through 2004 was provided relative to EGR-3. As the project moved forward, the IBRC was also able to provide similar data for the 1994 through 2004 on an "average annual" basis. This longer time frame was most helpful as the recession of the late 1990s and early 2000s had such a dramatic impact on the short timeframe information.

Of these 84 "industry" categories, 19 had a Fourth Quarter 2004 LQ greater than 1.20. (The SSI Guidebook indicates that LQs more than 1.20 should be considered "particularly significant"). Of those 19, 13 were in the manufacturing sector.

Those in manufacturing included:

- Wood Product Manufacturing (LQ=1.84)
- Paper Manufacturing (LQ=1.78)
- Printing and Related Support Services (LQ=1.89)
- Plastics and Rubber Products Manufacturing (LQ=4.42)
- Nonmetallic Mineral Product Manufacturing (LQ=1.76)
- Primary Metal Manufacturing (LQ=5.67)
- Fabricated Metal Product Manufacturing (LQ=2.98)
- Machinery Manufacturing (LQ=2.64)
- Computer and Electronic Product Manufacturing (LQ=1.98)

- Electrical Equipment, Appliance, and Component Manufacturing (LQ=2.60)
- Transportation Equipment Manufacturing (LQ=4.21)
- Furniture and Related Product Manufacturing (LQ=2.16)
- Miscellaneous Manufacturing (LQ=1.91)

Non-manufacturing "industry" categories with a location quotient over 1.20 were:

- Animal Production (LQ=1.30)
- Building Material and Garden Equipment and Supplies Dealers (LQ=1.27)
- Gasoline Stations (LQ=1.23)
- Truck Transportation (LQ=1.92)
- Warehousing and Storage (LQ=1.27)
- Other Information Services (LQ=1.64)

A listing of the lLQs for all three-digit NAICS-industry categories that have at least 1,000 employees as of the Fourth Quarter of 2004 appears in Section 10.1. The industry categories are arranged in the order of average weekly pay in Section 10.2.

Of the 85 "industry" categories for which average weekly wages per job information was available, for the Fourth Quarter of 2004, 40 categories had an average weekly wage per job greater than the $666.96 average for all "covered" employment in EGR-3. Fifteen of these industries were in the manufacturing sector.

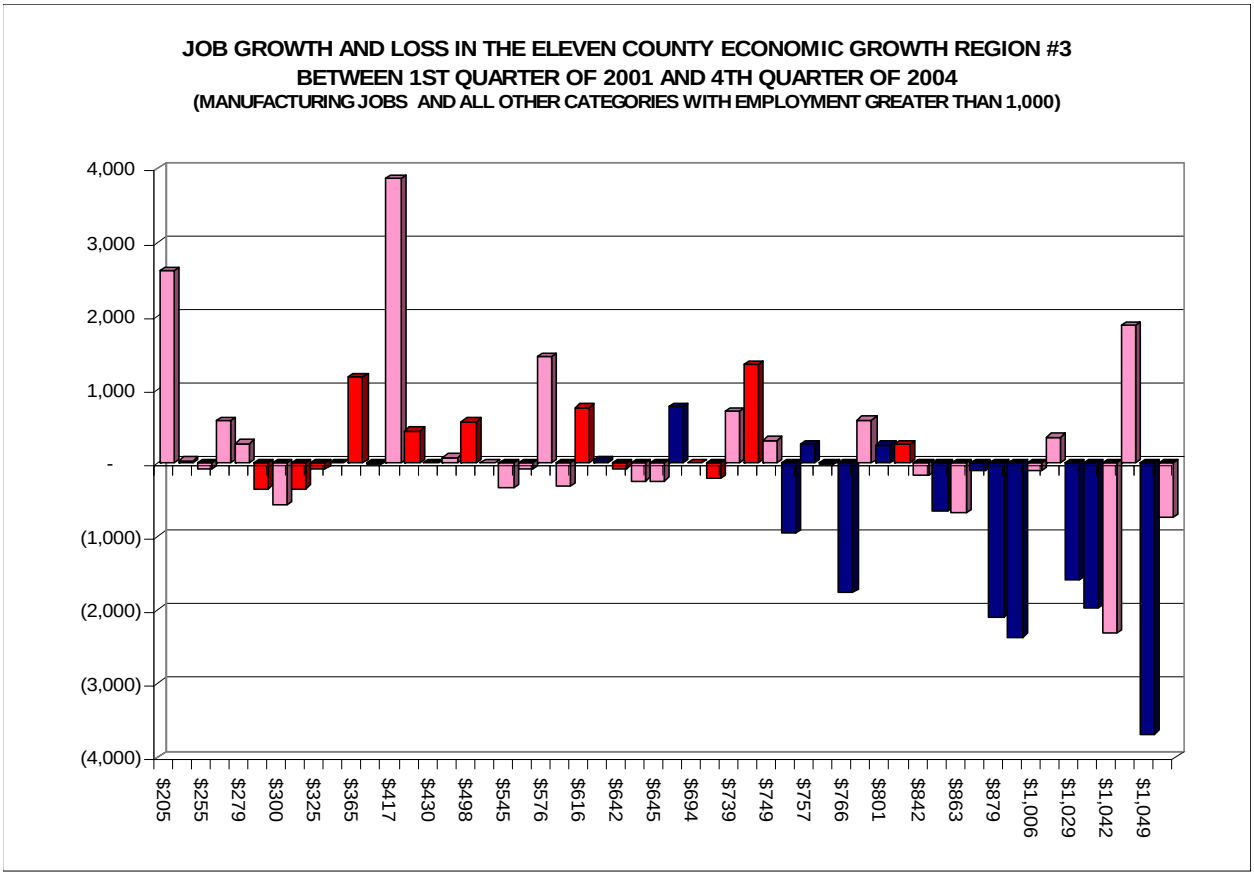
Of the 84 "industry" categories for which IBRC had performed a shift-share analysis, 23 industries experienced job gains in excess of 100 employees between the First Quarter of 2001 and the Fourth Quarter of 2004. Over the same time period 24 industries experienced a job loss of greater than 100 employees.

Industry Categories with a job gain of greater than 100 between the First Quarter of 2001 and the Fourth Quarter of 2004:

Industry	NAICS Code	Employment Gain
Forestry and Logging	113	116
Construction of Buildings	236	306
Heavy and Civil Engineering Construction	237	350
Specialty Trade Contractors	238	706
Food Manufacturing	311	249
Apparel Manufacturing	315	208
Wood Product Manufacturing	321	244
Furniture and Related Product Manufacturing	337	762
Building Material and Garden Equipment and Supplies Dealers	444	562
Clothing and Clothing Accessories Stores	448	265
Truck Transportation	484	257

Transit and Ground Passenger Transportation	485	112
Support Activities for Transportation	488	213
Credit Intermediation and Related Activities	522	584
Administrative and Support Services	561	3,861
Educational Services	611	1,440
Ambulatory Health Care Services	621	1,870
Hospitals	622	1,335
Nursing and Residential Care Facilities	623	436
Social Assistance	624	1,162
Amusement, Gambling, and Recreation Activities	713	571
Food Services and Drinking Places	722	2,609
Executive, Legislative, and Other General Governmental Support	921	757

The following chart illustrates the relationship between average wages paid (per week) in 2004 and First Quarter 2001 to Fourth Quarter 2004 job gains and losses by 54 three-digit NAICS-code industries with significant presence in EGR-3. Those industries classified as manufacturing are shaded in dark blue and have LQs greater than 1.00. Those shaded in pink are nonmanufacturing with LQs less than 1.00. Those shaded in red are nonmanufacturing with LQs greater than 1.00.



As can be seen, from this broad perspective, most of the industry categories in EGR-3 that pay above the average wage have also been losing employment over the past four years. A significant exception to that rule is NAICS category 621 – Ambulatory Health Care Services.

The next examination of our economy (from this high level of observation) was to examine which "industries" were gaining employment nationally at a faster rate than average national growth and which also had a substantive presence in EGR-3 and which industry categories Northeast Indiana was exhibiting a positive competitive advantage. These are basic components of a traditional "**shift-share analysis**".

Of the 84 "industry" categories for which IBRC had performed a shift-share analysis, 18 had an **industry mix job projection** over 100. This indicates which industries appear to have a strong national future and a significant presence in EGR-3. Of these 18, 13 did experience a job growth in excess of 100 between the First Quarter of 2001 and the Fourth Quarter of 2004.

Of the 84 "industry" categories for which IBRC had performed a shift-share analysis, 21 industries exhibited a significant job gain between the First Quarter of 2001 and the Fourth Quarter of 2004 to a regional competitive advantage (they had a "**regional job shift**" under the shift-share analysis) of greater than 100 employees.

Conversely, this analysis indicated that 24 of the 84 "tracked industries" had a significant job loss of greater than 100 employees (they had a "regional job shift" under the shift-share analysis) attributable to a regional competitive disadvantage.

In order to determine the high-growth, high-wage drivers of the EGR-3 economy, the following criteria were used to screen the 84 "industries" for which the IBRC has prepared LQ and shift-share analyses.

- The industry category contained more than 250 jobs in the Fourth Quarter of 2004.
- The industry provided average weekly wages per job greater than the Fourth Quarter 2004 average for all "covered" employment in EGR-3.
- The industry category had a Fourth Quarter 2004 LQ above 1.20.
- The industry category had positive job growth between the First Quarter of 2001 and the Fourth Quarter of 2004.
- The shift-share analysis indicated a positive industry jobs mix.
- The shift-share analysis indicated a positive regional job shift.

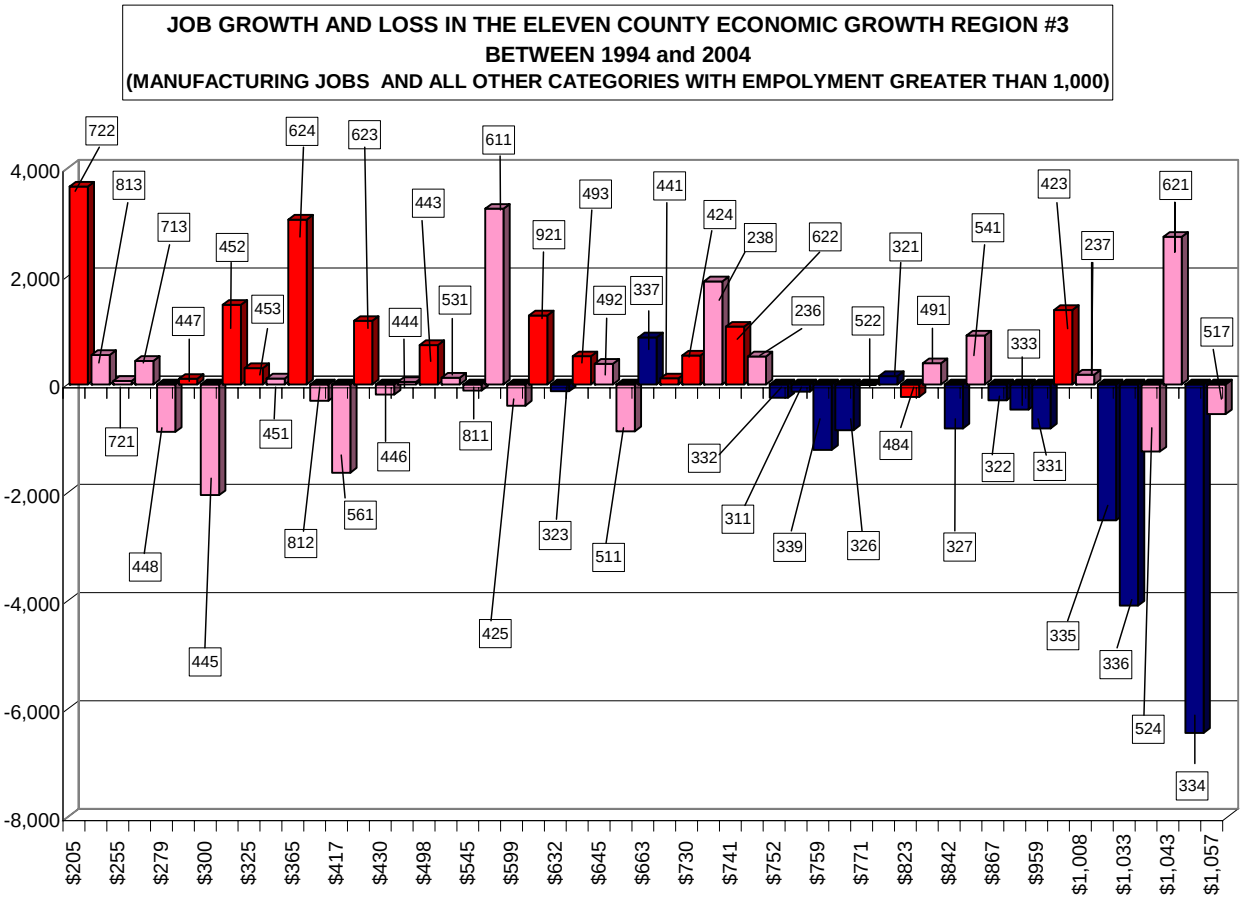
In EGR-3 no industry categories made it through this six-part test.

If the third criterion was modified to indicate a neutral or positive LQ (greater than 0.80); two industry categories met all six criteria. These were:

- Ambulatory Health Care Services (#621)
- Hospitals (#622)

Once the 1994-2004 employment data by EGR was made available on the SSI data packet, we were able to reconstruct the previous chart with the long timeframe information.

The following chart illustrates the relationship between average wages paid (per week) in 2004 and 1994-2004 job gains and losses by 54 three-digit NAICS-code industries with significant presence in EGR-3. Those industries classified as manufacturing are shaded in dark blue and have LQs greater than 1.00. Those shaded in pink are nonmanufacturing with LQs less than 1.00. Those shaded in red are nonmanufacturing with LQs greater than 1.00. Unfortunately, the 1994-2004 analysis compared with that for the 2001-2004 analysis did not bring significant new insight into the process. One exception is NAICS code 423 Merchant Wholesale, Durable Goods; showing both a positive 10-year job growth and a current location quotient greater than 1.00.



The following chart lists, from left to right, the NAICS code, the specific industry and its corresponding 1994-2004 job change:

NAICS CODE	INDUSTRY	1994-2004 JOB CHANGE
722	Food Services and Drinking Places	3,658
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	545
721	Accommodation	66
713	Amusement, Gambling, and Recreation Industries	434
448	Clothing and Clothing Accessories Stores	(879)
447	Gasoline Stations	103
445	Food and Beverage Stores	(2,047)
452	General Merchandise Stores	1,472
453	Miscellaneous Store Retailers	302
451	Sporting Goods, Hobby, Book, and Music Stores	110
624	Social Assistance	3,048
812	Personal and Laundry Services	(304)
561	Administrative and Support Services	(1,630)
623	Nursing and Residential Care Facilities	1,174
446	Health and Personal Care Stores	(189)
443	Electronics and Appliance Stores	46
444	Building Material and Garden Equipment and Supplies Dealers	728
531	Real Estate	123
811	Repair and Maintenance	(112)
611	Educational Services	3,250
425	Wholesale Electronic Markets and Agents and Brokers	(393)
921	Executive, Legislative, and Other General Government Support	1,274
323	Printing and Related Support Activities	(128)
493	Warehousing and Storage	521
492	Couriers and Messengers	381
511	Publishing Industries (except Internet)	(868)
337	Furniture and Related Product Manufacturing	869
441	Motor Vehicle and Parts Dealers	112
424	Merchant Wholesalers, Nondurable Goods	535
238	Specialty Trade Contractors	1,904
622	Hospitals	1,068
236	Construction of Buildings	518
332	Fabricated Metal Product Manufacturing	(247)
311	Food Manufacturing	(134)
339	Miscellaneous Manufacturing	(1,212)
326	Plastics and Rubber Products Manufacturing	(844)
522	Credit Intermediation and Related Activities	(11)
321	Wood Product Manufacturing	156
484	Truck Transportation	(232)
491	Postal Service	392
327	Nonmetallic Mineral Product Manufacturing	(814)
541	Professional, Scientific, and Technical Services	903
322	Paper Manufacturing	(295)
333	Machinery Manufacturing	(463)
331	Primary Metal Manufacturing	(814)

423	Merchant Wholesalers, Durable Goods	1,378
237	Heavy and Civil Engineering Construction	181
335	Electrical Equipment, Appliance, and Component Manufacturing	(2,511)
336	Transportation Equipment Manufacturing	(4,090)
524	Insurance Carriers and Related Activities	(1,243)
621	Ambulatory Health Care Services	2,730
334	Computer and Electronic Product Manufacturing	(6,444)
517	Telecommunications	(549)

We originally thought that Phase I would be primarily a "data-driven" exercise. Unfortunately, the data are not producing crystal clear direction – far from it. They are helpful in improving our "understanding" of the Northeast Indiana economy, but are far less helpful in illustrating the path to our optimal economy of the future.

4.3. Revised approach – Expert driven, backed up by data

It is understood that while the search at the three-digit NAICS-category level did not produce obvious "key industries," our potential targets are very likely buried within several of those categories.

As a result, the staff – working in consultation with the Lead Team – identified several industries for which local knowledge and past research suggested them as prime candidates for meeting the "high-growth/high-wage" criteria. This section outlines the development of that identification.

Core agent Patty Weddle gained verbal approval during a telephone call on September 12, 2005, with IWD Deputy Commissioner Andrew Penca to realign our methodological approach within the context of the guidelines of the SSI project's recommended methodology.[4] Rather than use data to drive our initial definition of critical industries, occupations and skills, we switched to an approach where primary data derived from community leadership would guide our Lead Team and Consortium. Data analysis would then support or dispute our expert findings.

A combined meeting of the Lead Team and Consortium was held on September 28 to process the LEDO information and determine the Northeast Indiana SSI project's target industries. Following a presentation of statistical data and the results of the LEDO interviews, the group, using a two-part distillation process of nomination and selection, determined that our three core areas of activity would be:

- Health-care delivery
- Transportation/Logistics/Warehousing
- Advanced manufacturing

[4] "Request for Applications – Indiana Workforce Development Strategic Skills Initiative," p. 11, Sect. III(a)(1.), Step 1.

Following a round of industry expert interviews, the Lead Team met on October 18 and Consortium met on October 19 to review the industry occupation/skill questionnaires and their findings. As the results and data coincided strongly by industry area, staff presented and community leadership approved the following areas of action:

Industry	Demand	Programming goal
Health-care delivery	Registered nurses	RN's with 2-year degrees, 4-year degrees and advanced certifications
Transportation/Logistics/Warehousing	CDL licenses	Licensed truck drivers
Advanced manufacturing	CNC skills, advanced CAD/engineering skills	CNC operation and maintenance, Industrial Engineers

The groups also endorsed a longer-term vision of creating a volume of general competencies in technology, systems engineering and informatics, emphasizing practical application of those skills across all three industry areas. This is discussed in Section 8.

Further effort by the SSI staff revealed that the goal of using SSI to build the pool of CDL-qualified truck drivers was not feasible at this time. This issue is detailed in section 9.2.1.

5. Use of resources

Understanding that the active utilization of all possible resources is an important component of the recommended methodology of the SSI project at the institutional capacity-building level, a summary of our activity follows.

5.1. Workshops

As building a wide base of community understanding of the demand-driven, data-intensive planning process was a goal of the SSI project, staff coordinated a series of Web-based workshops with Workforce Associates on a standardized schedule that community leadership could plan around (in this case, Monday mornings) which was communicated to all Lead Team and Consortium members. Each of the six workshops was attended by different members of our community leadership, who participated as actively as staff. Special note should be made of Lead Team members Tom Braun and Kirk Kemmish, who participated in every workshop. Consortium members Deb Conklin, Mike Landram and Dennis Silkworth were regular workshop participants, as well.

5.2. Primary Research

Once our revised approach was approved by IWD, the importance of primary research was clear. Our regional experts would have the responsibility of guiding the direction of this project, and we would be responsive in a truly data-driven environment. With this consideration, the approach and process of gathering primary research became even more critical.

5.2.1. Interviews

The direct interview was the preferred method of information gathering during this stage. SSI staff was well-versed in conducting such interviews, and it was deemed that, considering the time constraints and resources available, interviews could garner the most information in the least amount of time.

Interviews were deemed preferable to larger group discussion because of the increased likelihood that an expert would dominate discussions based on ab area of expertise. In a group format, there was also a tendency to restrict ones own participation for fear of monopolizing the group's time. The tendency toward groupthink and reluctance to share an alternate or opposing viewpoint was also a concern. In an open-ended discussion phase like the SSI Shortages identification phase, expansive answers demonstrating firm opinions were critical.

5.2.1.1. Community expertise: Local Economic Development Organizations

At the community level, we believed that the best source of general industry and economic development information would be our LEDOs. The week of September 19 was spent personally contacting every LEDO to gain impressions of the key industries in each respective service areas. SSI staff interviewed 11 of the 13 responding LEDOs. The remaining two LEDOs submitted their feedback via email. Every county in EGR-3 offered input, as well as two regional economic development experts.

The LEDO interviews focused on open-ended questions that allowed LEDO feedback to structure our data analysis efforts. A sample survey and a cross-tabulated matrix of responses can be found in Section 10.4.[5]

5.2.1.2. Industry expertise: Business owners, managers and human resources staff

Our first group of industry leaders was selected via personal referrals from LEDOs and SSI community leadership, which were gathered through the LEDO interview phase and immediately following the September 28 Lead Team/Consortium meeting. Combining the referrals with InfoUSA information obtained through the online SSI Analysis Toolkit, staff then generated a larger list of EGR-3 based companies in like NAICS classifications.

Interviews were solicited from owners, managers and/or human resources staff from within the lists generated. Nearly all of the requests for interviews were granted. Those who did not grant interviews cited lack of availability during the interview window.

Both geographic and industry diversity were considered when scheduling interviews. As Allen County is roughly half the population of EGR-3, it was targeted for an equivalent number of interviews. The remainder of interview requests was spread throughout the region, with a disproportionate weighting of requests in the transportation/logistics area going to Grant County in recognition of their recent successes in attracting such facilities to Marion and Gas City. Interviews were conducted with leadership of Northeast Indiana's two Fort Wayne-based regional health systems, who addressed the needs of their respective multicounty networks of hospitals and associated health-care delivery facilities.

Twenty-six individual interviews were conducted with experts in our three targeted industries between October 6-18 to determine critical occupational and skill shortages.

[5] Less than 7 of the anonymous LEDO respondents requested that their responses be held confidential, but some of this group asked for right of first refusal on publication of their comments. Due to the severe time limitations of this phase of the SSI project, it was agreed to keep their responses confidential rather than create unnecessary logistical hurdles.

A sample industry questionnaire and list of interviewees can be found in Section 10.5.1.[6]

5.2.2. Electronic surveys

In an effort to gain wider industry-level participation than individual interviews would allow, two electronic approaches were utilized. First, local Chambers of Commerce and the Northeast Indiana Chapter of TechPoint were solicited to forward electronic versions of our survey to their members who worked in our target industries. Second, Zoom Information Systems of Fort Wayne volunteered to host an online survey using the same questions in our industry questionnaire. Between the two electronic methods, 18 questionnaires were completed, the majority of which were in our targeted industries.

5.2.3. Focus groups

We conducted four focus groups over the course of the Shortages Report Phase of the SSI project. One group brought together regional Chambers of Commerce executives to assist in interpreting the LEDO interview results and gain their insights on foundational industries in the same vein as described in Section 5.2.1.1. Another brought together members of the Indiana Northeast Development Board of Directors who were not involved in the LEDO interviews for a similar purpose to that of the Chamber focus group. The other groups, held during the industry interview phase, were comprised of teams of senior staff at two area employers.

After making our methodological course correction post-September 12, we chose to emphasize the aggregation of individual expert insight and knowledge during the Shortages' phase of the project, backing up that wisdom with appropriate data. This was gained largely through individual interviews.

A final focus group was conducted with the help of the Northeast Indiana Innovation Center and the Northeast Indiana chapter of TechPoint. This group provided insight and assistance in determining the appropriate occupational area and key skill sets to focus on in Section 8.

Focus groups will be a core element of our implementation of the Root Causes' Phase of the SSI, and likely in the Solutions Phase as well.

5.2.4. Secondary research

The SSI staff reviewed a number of secondary research sources during this process, which roughly breaks down into four information source areas:

[6] Again, confidentiality of responses was a consideration for industry respondents. In respect for their wishes, only a list of interviewees and survey respondents will be included in this report.

- Global – Opinions from recognized thought leaders and national/international statistical sources.
- State – Reports and analysis from the State of Indiana and Indiana-oriented business and industry research and the data compiled for the IBRC's Strategic Skills Initiative data portal. Some of this information discussed Indiana in the collective sense, but others spoke to Northeast Indiana and EGR-3. Media releases and press reports also were included.
- Regional – We are fortunate to draw upon a strong economic research and analysis base in Northeast Indiana, and the reports generated from that base assisted in driving our conclusions.
- Industry – Research reports from industry associations were combined with local, regional and national media coverage of our targeted industries.

This information provided a philosophical foundation for our project, and this section outlines the sources that commanded our attention. A full listing of the sources consulted over the course of this phase of the SSI project is offered in Section 10.7., but particularly strong influences on our decision making are detailed below.

5.2.5. Global research

While the team assembled all had elements of expertise in the issues of workforce, economics and global affairs, it was important that a shared understanding of information took place. Therefore, a premium was placed on making these key pieces of global information available and accessible to our community leadership as well as SSI staff.

5.2.5.1. White papers/Think tank papers

At the macro level, our most profound opinion development formed around "The World Is Flat: A Brief History of the Twenty-First Century" by the *New York Times'* Thomas Friedman, and "Manpower: Future World of Work, 2005 series, Paper No. 1 - Future Workforce Skills: Some Pointers and Options for Managers in an Uncertain World" by Dr. Richard Curtain, Curtain Consulting, Melbourne, Australia for Manpower Services (Australia) Pty Ltd.

In his book, Friedman outlined the "flat world" and the 10 drivers of this new socio-economic paradigm that have emerged since the fall of the Berlin Wall. His description of those 10 drivers provided a necessary foundation for our global economic understanding. In addition, the book provided a necessary global perspective, namely, EGR-3 is not competing against other regions of the state – or even other states, for that matter. We are part of a larger global competition and must recognize the need to emphasize our global strengths.

Dr. Curtain's Manpower report is a brief, fascinating study of American trends in skill and occupational development. In it, he outlines the steady shift of American occupations over the period of 1969-1999 from routine and manual skills (which presumably require less education and training) to expert thinking and complex communication skills.[7]

Curtain's report led us to uncover a third, noteworthy report, the Organisation for Economic Co-operation and Development's (OECD) 2004 "Problem Solving for Tomorrow's World: First Measures of Cross-Curricular Competencies from PISA 2003." This report clearly showed a disparity between critical skill sets like problem solving as identified in Curtain's report and our nation's educational performance (ranking 29th out of 40 OECD countries) when compared against our global competitors.[8]

The combination of global trends, as identified by Friedman, recent American trends as defined by Curtain and American educational performance as outlined by the OECD is cause for great concern for all citizens of Northeast Indiana – be they government leaders, business leaders, educators, parents or students. Without a broad appreciation for and meaningful response to these trends, we fear that the weak economic performance of EGR-3 will continue, causing further stress on our communities and those who live in them.

5.2.5.2. Labor Market Information database

In addition to the information provided by the IRBC and the IDWD in the SSI data packets, we have extensively drawn upon data from the BLS (particularly the QCEW data); the Harris Industrial Directory; the top employers information collected annually by the Community Research Institute (CRI) and several of the Chamber of Commerce and LEDO offices throughout the region; local annual wage and benefit surveys gathered in two of the EGR-3 counties (Allen and Whitley); and the U.S. Census Bureau's Longitudinal Employer-Household Dynamics QWI online database. Other information examined included the Industry Cluster Analysis prepared by the Purdue University Center for Regional Economic Development in late 2004 and historical data on the economy of Northeast Indiana assembled in the preparation of the report, "The Performance of the Northeast Indiana Economy Over The Past 30 Years" as prepared in 2000 by the CRI at Indiana University-Purdue University at Fort Wayne.

[7] Curtain, p. 8.
[8] OECD, Figure 2.4, p. 42.

5.2.6. State research

5.2.6.1. State of Indiana reports: IEDC & DWD

While we await formal reports on the state economy from the Indiana Economic Development Corporation, we fall back to analysis offered in the former Indiana Economic Development Council's landmark 1999 study, "Break Away Growth." "Break Away Growth" provided a valuable perspective, especially on the need to emphasize the role of the transportation/logistics industry in Northeast Indiana. It also assisted in providing needed perspective on the challenge of crafting an economic development approach built on sustainable wage levels for our region's entire labor force, something we agree with and hope to promote through the Northeast Indiana SSI project.

The IWD "Strategic Two-Year Plan for Title I of the Workforce Investment Act of 1998 and the Wagner-Peyser Act; July 1, 2005, through June 30, 2006; Modification 1" explains the role of SSI within the larger context of the State of Indiana's workforce vision, giving credence to our view that SSI is a tool and not an end to itself. The plan document also provides strong economic and labor market analysis data, referenced elsewhere in this report.

5.2.6.2. Nongovernmental reports

Two key reports from nongovernmental interest groups regarding the Indiana economy and workforce assisted in developing a picture for our state, which in turn then assisted in the analysis of data on the SSI Web site.

The Indiana Manufacturers Association (IMA) commissioned "What Indiana Makes, Makes Indiana" to highlight the ongoing importance of manufacturing to our state's economy. This report is discussed in more depth in Section 7.1.1.

"A Demand-Side Strategy to Meet Indiana's Workforce Basic Skills Challenge," prepared by FutureWorks for the Indiana Chamber of Commerce Foundation, issues a thorough and disconcerting view of workplace literacy in Indiana. The knowledge economy in which we live demands a different set of skills than those the manufacturing or agricultural economies ever asked of their populations and education systems.

Interviews with EGR-3's LEDOs and industry experts uncovered a widespread appreciation of this issue across the entire region. Section 9.1.1. outlines additional, non-SSI thinking on this front.

5.2.6.3. SSI Web site/IBRC data

The IWD SSI Web site was a valuable asset. The Web site made this entire process possible in our relatively short-time window. Without a unified source of meaningful, reliable data, our efforts would have been spent drawing together disparate data sources instead of using the data to justify decision making – or even making contacts with EGR-3 community and industry experts.

All of the graphical content in Sections 3 and 4 is generated from content gathered from the data compiled by the IBRC and presented through the SSI Web site. Any other unattributed tables, charts or data can also be attributed to the IBRC data and the SSI Web site.

The industry employment and occupational data provided by the IBRC through the SSI Web site will have continuing value to our regional workforce/economic development efforts long after the completion of the initial SSI reports. This database is a significant new resource to assist in the ongoing development of local and regional public policy. We strongly encourage IWD to continue making this data available on the Web site and to support the continuous updating of the information over time.

5.2.7. Regional reports

Our research also included a review of several prior regional economic development studies and plans. In nearly every case, one or several Lead Team and/or Consortium members were instrumental players in the preparation of these studies.

These works included:

- "An Economic Analysis of Allen County, Indiana." One of the most extensive analyses of our local economy – or at least the Allen County portion of the region – was undertaken in the mid-1990s by the staff of the Allen County Department of Planning Services. Several of the analytical techniques engaged in this phase of the SSI were included in that 1997 report.
- In September of 2000, Dr. Tom Guthrie and Valerie Richardson of the IPFW Community Research Institute issued a comprehensive analysis of the Northeast Indiana economy over the past 30 years. There is perhaps no better single source of historical data on the Northeast Indiana economy and is evolution.
- "Northeast Indiana Economic Development Plan: Investing in our Future." In 2003, the Northeast Indiana Corporate Council prepared an overview white paper on regional economic development which highlights the major economic transformation underway and its impact on our region.
- "A New Path to Progress: Region 3 Strategic Plan for Economic Development." In late 2004, the Indiana Economic Development Council prepared a Strategic Plan for Economic Development for IDOC Region 3. It included a very simplistic cluster analysis.

- "Region III-A Comprehensive Economic Development Strategy, 2005 Update." Each year the Region 3A Regional Planning Commission and Economic Development District prepares an update to its Comprehensive Economic Development Strategy. The entire strategy was fully revised in the Fall of 2003.
- "Northeast Indiana: Preparing for the Future." In January, 2005, the Northeast Indiana Workforce Investment Board (NIWIB) prepared an economic analysis document entitled "Northeast Indiana: Prepare for our Future," adding several significant new insights into the dynamic of the regional economy and workforce.

5.2.8. Industry reports

A number of Industry Reports were used in developing this report. In the interest of keeping the report clear, these reports are overviewed within the context of their specific industry/occupation/skills sections of their reports.

6. Target Industry: Health care delivery

6.1. Overview

Taking advantage of its advantageous medical malpractice landscape and strong medical education programs, Indiana has positioned itself as a provider of high-quality medical care services. It is logical, therefore, to understand that Northeast Indiana, being positioned on the border of both Michigan and Ohio, has the potential to develop its medical-care services into a source of regional attraction and wealth. These assumptions appear to be coming to fruition, and we believe that further support for this already-healthy industry could bolster its economic development potential and act as a source of higher-wage jobs for our region's residents.

One comment from a Lead Team member bears repeating in the context of this report as it encapsulates the relationship between traded and nontraded clusters and industries and the ultimate sensitivity of the health-care marketplace to the strength of the regional economy:

> "While I own a health-care institution, I am a service provider. I need people with health insurance to utilize the services I have to offer. So we on the Strategic Skills Initiative have to ensure that we have enough jobs with sufficient wages and benefits to keep our health-care system strong."

From a data point of view, both NAICS codes 621 (Ambulatory health-care services) and 622 (Hospitals) were the closest to making the initial cutoff for the initial, data-driven definition of a growth industry. This industry area would not be considered a traded cluster except for the slightly stronger than average LQ and general acceptance that Fort Wayne serves as a regional specialty medical hub for Northern Indiana, Northwest Ohio and even Southern Michigan.

The occupational and skill challenges of health-care delivery are crystallizing on two fronts. As our interviews developed, the immediate demand revolved over the lack of registered nurses, which will be further elaborated in this section.

Beyond direct patient care, however, the emerging issue in health-care delivery appears to be how to best harness the possibilities of information technology to build productivity, enhance efficiency and control costs while not sacrificing the "bedside manner" that consumers demand. This emerging issue dovetails with those of our other target industries, and it will be investigated in Section 8.

6.2. Industry Reports

In its "High Growth Industry Profile" on health care, the U.S. Department of Labor's Employment and Training Administration (ETA) showcases the robust state of American health care:[9]

- The health-care industry is predicted to add nearly 3.5 million new jobs between 2002 and 2012, an increase of 30 percent. (BLS)
- Projected rates of employment growth for the various segments of the industry range from 12.8 percent in hospitals, the largest and slowest-growing industry segment, to 55.8 percent in the much smaller home health-care services. (BLS)

On their "High Growth Industry Profile" printed literature, the ETA adds even more compelling evidence to the strength of the health-care industry nationwide:[10]

- It is predicted that about 16 percent of all new wage and salary jobs created between 2002 and 2012 will be in health services. (BLS)
- From 2002-2012, 10 of the 20 fastest growing occupations are in health services. (BLS)

6.3. EGR-3 Demographics

6.3.1.1. Location quotients

Per the data provided via the SSI interactive tool, the LQs for the three primary categories of health care (NAICS code 621-Ambulatory Health Care Services, 622-Hospitals and 623-Nursing and Residential Care Facilities) have been on the increase between 1994 and 2004.

- For Ambulatory Health-Care Services, it grew from 0.83 to 0.99.
- For Hospitals, it grew from 1.00 to 1.09.
- For Nursing and Residential Care Facilities, it grew from 1.07 to 1.15.

6.3.1.2. Shift-share analysis

The 1994-2004 shift-share analysis indicated that we still have a competitive jobs disadvantage in the health-care industry:

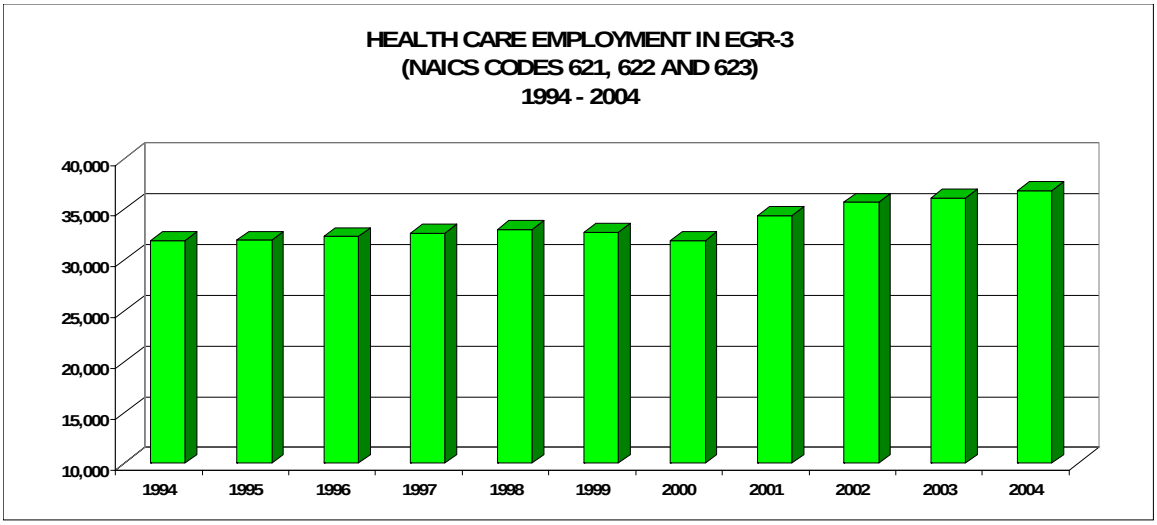
- For Ambulatory Health-Care Service, we had a 1994-2004 regional competitive disadvantage of -453 (up from a low of -921 in 1997).
- For Hospitals, we had a 1994-2004 regional competitive disadvantage of -761 (up from a low of -1,931 in 2000).

[9] High Growth Industry Profile – Health Care. U.S. Department of Labor, Employment and Training Administration. Accessed 27 Oct. 2005 <http://www.doleta.gov/BRG/Indprof/Healthcare_profile.cfm>.
[10] Dale, A. "High Industry Growth Profile – Health Care." U.S. Department of Labor, Employment & Training Administration. 21 May 2004. p. 1.

- For Nursing and Residential Care Facilities, we had a 1994-2004 regional competitive disadvantage of -597.

6.3.1.3. Employment levels

True to national trends, employment in the health-care fields is growing in EGR-3. Employment levels in the three three-digit NAICS-code areas of Ambulatory care, Hospitals and Long-term care equals 36,891, or 10.8 percent of the region's entire workforce of 340,411.



Employment nationally in these three health-care related NAICS codes (621, 622 and 623) grew a combined 22 percent between 1994 and 2004. Employment for these three NAICS codes grew by 15.6 percent in EGR-3 over the same time period. Our overall employment grew by only 0.6 percent in that 10-year period in EGR-3. Health-care employment per capita grew slightly faster in EGR-3 than nationally (8.4 per 100 residents compared with 8.0 per 100 residents).

6.3.1.4. NAICS-code overviews

Ambulatory Health Care Services (NAICS #621)	Hospitals (NAICS #622)	Nursing and Residential Care Facilities (NAICS #623)
• 4th Q 2004 Average Weekly Wage = $1,042.95 • 1st Q 2001 Average Weekly Wage = $721.84 • 2004 Average Annual Wage = $46,154 • 1994 Average Annual Wage = $34,086 • 4th Q 2004 Total Employment = 12,218 • 1st Q 2001 Total Employment = 10,348 • 2004 Average Annual Employment = 12,049 • 1994 Average Annual Employment = 9,319 • Occupational Base Year Employment (2002) = 11,290 • Projected Employment in 2012 = 15,110 • 4th Q 2004 Number of Establishments = 882 • 1st Q 2001 Number of Establishments = 794 • 2004 Number of Establishments = 934 • 1994 Number of Establishments = 886 • Info USA lists 1,216 establishments • 4th Q 2004 LQ = 0.91 • 1st Q 2001 LQ = 0.86 • 1994 Location Quotient = 0.83 • 1994- 2004 Employment Change = +2,730 • 1st Q 2001 to 4th Q 2004 job change = +1,870 • 2001-2004 Shift-Share Regional Jobs Shift = +304 • 2001-2004 Shift-Share Industry Jobs Mix = +1,371 • 1994-2004 Shift-Share Regional Jobs Mix = -453 • 1994-2004 Shift-Share Industry Jobs Mix = +1,793	• 4th Q 2004 Average Weekly Wage = $740.93 • 1st Q 2001 Average Weekly Wage = $639.96 • 2004 Average Annual Wage = $36,895 • 1994 Average Annual Wage = $25,281 • 4th Q 2004 Total Employment = 15,720 • 1st Q 2001 Total Employment = 14,385 • 2004 Average Annual Employment = 15,693 • 1994 Average Annual Employment = 14,625 • Occupational Base Year Employment (2002) = 14,040 • Projected Employment in 2012 = 15,190 • 4th Q 2004 Number of Establishments = 22 • 1st Q 2001 Number of Establishments = 23 • 2004 Number of Establishments = 22 • 1994 Number of Establishments = 26 • Info USA lists 70 establishments • 4th Q 2004 LQ = 1.09 • 1st Q 2001 LQ = 1.04 • 1994 Location Quotient = 1.00 • 1994- 2004 Employment Change = +1,068 • 1st Q 2001 to 4th Q 2004 job change = +1,335 • 2001-2004 Shift-Share Regional Jobs Shift = +248 • 2001-2004 Shift-Share Industry Jobs Mix = +816 • 1994-2004 Shift-Share Regional Jobs Mix = -761 • 1994-2004 Shift-Share Industry Jobs Mix = -353	• 4th Q 2004 Average Weekly Wage = $424.24 • 1st Q 2001 Average Weekly Wage = $390.17 • 2004 Average Annual Wage = $21,167 • 1994 Average Annual Wage = $13,974 • 4th Q 2004 Total Employment = 9,122 • 1st Q 2001 Total Employment = 8,686 • 2004 Average Annual Employment = 9,149 • 1994 Average Annual Employment = 7,975 • Occupational Base Year Employment (2002) = 8,910 • Projected Employment in 2012 = 10,740 • 4th Q 2004 Number of Establishments = 139 • 1st Q 2001 Number of Establishments = 153 • 2004 Number of Establishments = 146 • 1994 Number of Establishments = 143 • Info USA lists 115 establishments • 4th Q 2004 LQ = 1.15 • 1st Q 2001 LQ = 1.14 • 1994 Location Quotient = 1.07 • 1994- 2004 Employment Change = +1,174 • 1st Q 2001 to 4th Q 2004 job change = +436 • 2001-2004 Shift-Share Regional Jobs Shift = -215 • 2001-2004 Shift-Share Industry Jobs Mix = +487 • 1994-2004 Shift-Share Regional Jobs Mix = -597 • 1994-2004 Shift-Share Industry Jobs Mix = -581

6.4. Target occupation: Degreed registered nurses

6.4.1. Industry perspective

Of all the occupational shortages facing Indiana and the United States, nursing may be the best advertised. Linda Aiken, Professor and Director, Center for Health Outcomes and Policy Research, University of Pennsylvania, the U.S. has 2,750,000 professional nurses (plus 500,000 licensed practical nurses), or one nurse for about every 100 Americans. She adds that there will be close to 650,000 new nurse jobs by 2012, the highest growth rate of any US occupation.[11]

Indiana Nursing Workforce Development's (INWD) "Statewide Survey of Nursing Students and Faculty Compilation Reported January 2005" reports that "interest in nursing is outpacing programs' abilities to meet this demand." The available supply apparently is attempting to meet demand through increasing matriculation in nursing education programs, as INWD explains:

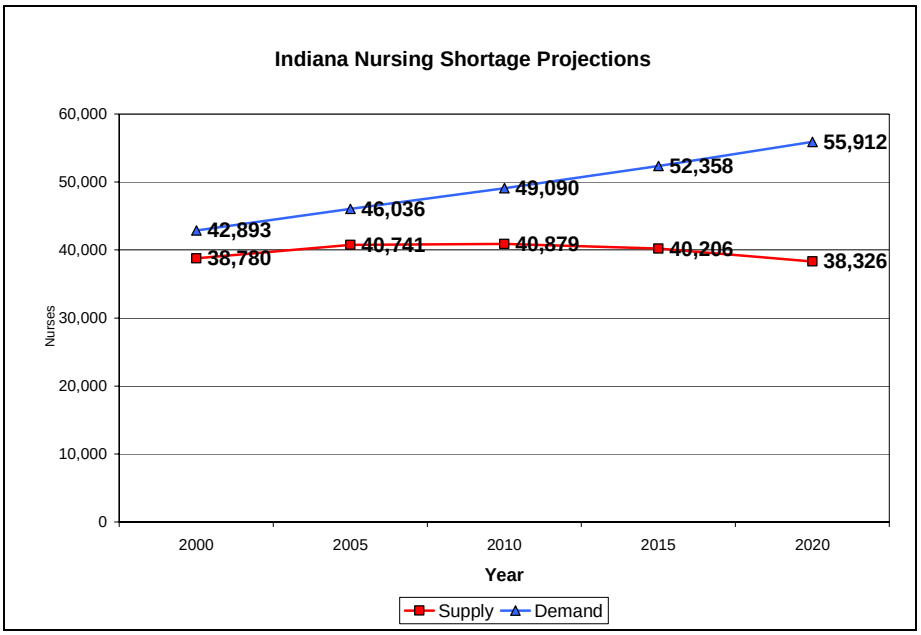
- New enrollment increased in one year in the ASN (associate) program by 8.3 percent, in the BSN (bachelor's) program by 5.5 percent, and in the MSN (master's) program by 57 percent.
- Graduates of the ASN program increased 23 percent over 2002-2003 data; while graduates of the BSN program decreased 8.5 percent over this same time period.
- Of the 2,302 nursing degrees awarded, 1,779 of those graduates are new to the nursing workforce.

In light of these impressive numbers, it is important to realize that the nursing shortage still will exist. As the demographic information on nursing in EGR-3 will indicate, these are well-paying jobs that still are in high demand.

Other reports of note include the American Association of Colleges of Nursing, whose "Nursing Shortage Fact Sheet" (Version last updated October 18, 2005) tells us that 1 million new nurses are needed nationally to accommodate the growth and replacement changes projected to take place between now and 2012.

The National Center for Workforce Analysis' "Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020" indicates that, as of 2000, the State of Indiana was already in a significant demand supply shortage situation. This shortfall was determined through the unique "Nursing Demand Model" and "Nursing Supply Model."[12] The following chart, derived from the report. It shows clearly that not only is there a shortage of current enrollments in nursing programs, but that the replacement issue will rise between 2015-2020 as Baby Boomers begin retiring in large numbers.[13]

[11] Aiken, Linda. "International Nursing Shortage: Bellagio Conference." Presented to Academy Health's International Exchange, Jul. 2005, slide 1.
[12] National Center for Workforce Analysis, p. 20-22.
[13] Ibid, p. 14-18.



Source: National Center for Workforce Analysis, p. 14-18

Jobs for the Future, in its "The Right Jobs" report, identifies nursing (specifically registered nursing) as an occupational field with few institutional risk factors – a low chance of having these skills subject to offshoring, unlikely prospects that technology will render the professional obsolete and high likelihood that the health-care industry will remain intact for the foreseeable future.[14]

According to the ETA, it is projected that the number of registered nurses will grow by 27.3 percent between 2002 and 2012. They also tell us that a 2002 hourly mean wage for a registered nurse with an associate's degree is $23.96, well over the EGR-3 median wage.[15]

Lastly, the shortage in nursing nationwide is causing the health-care industry to add nursing staff from overseas to fill their open positions. According to Dr. Aiken, foreign-born nurses accounted for an estimated one-third of the increase in employed nurses in the U.S. 2001-03.[16] The expansion of foreign-born nurses because of our skill shortage affects Indiana as well; roughly 2 percent to 3 percent of the Indiana nursing population in 2000 was foreign born, a number sure to grow over the years ahead as Indiana health-care employers fill demand by all possible means.[17]

[14] Goldberger, Susan; Newell Lessell and Radha Roy Biswas for Jobs for the Future. "The Right Jobs: Identifying Career Advancement Opportunities for Low-Skilled Workers," p. 9,
[15] ETA, p. 2.
[16] Aiken, slide 3.
[17] Aiken, slide 8.

Aiken cautions against looking overseas to fill America's nursing shortage in its entirety. She indicates that the projected shortfall is too large to be solved through international recruitment.[18]

6.4.2. Regional perspective

An overwhelming shortage of nurses exists across the region, but discussion with industry knowledge leaders indicates that there is a dichotomy between the larger, Fort Wayne-based regional medical systems and the region's independent hospitals.

At the medical-system level, the shortage in general, degreed nurses appears to have been alleviated through partnerships that both Parkview Health and Lutheran Health Systems have made with local educational institutions.[19] These institutions, however, still have unfilled need in the area of advanced nursing certifications for their tertiary care services, especially cardiovascular, orthopedics, trauma, neurosciences and cancer.

At the community-hospital level, the shortage in registered nurses is acute across the board. With the exception of Adams County Memorial Hospital, which has a model nursing program established with its local high schools, EGR-3's community hospitals have significant demand for two-year and four-year nurses. Advanced certifications are not a significant concern for community hospitals.

The workforce shortage has an effect on all medical institutions. One industry expert stated, "Without these key staff, we will ship people out to other facilities for care. We will decrease our level of service, or perhaps close a specific facility if our global shortage is great enough."

Another expert from a smaller, community hospital discussed the use of temporary, or "agency" nursing staff as a means to alleviate the workforce shortages. Institutional control over agency nurses is a challenge as this expert has found that agency nurses often demonstrate a lower degree of personal commitment than a permanent employee.

A regional health-system expert indicated that shift shortages for RNs can be routinely corrected by calling RNs who work less than full time. As facilities grow and expand (and all but one of the facilities visited during the interview phase had expanded within the last two years), however, the number of beds expands and more RNs are needed for scheduling purposes.

[18] Aiken, slide 13.
[19] An example of the style of partnership can be drawn from the Fort Wayne News-Sentinel's August 11, 2005 article, "Filling the Nursing Gap," which describes Parkview Health's significant investment in the nursing program at the University of Saint Francis.

6.4.3. Occupational description

O*Net describes the registered nurse (SOC 29-1111) occupation as follows:

> Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes advanced practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.
> *Sample of reported job titles: RN (Registered Nurse), Staff Nurse, Staff RN (Staff Registered Nurse), Charge Nurse, OR RN (Operating Room Registered Nurse), Clinical Nurse, Oncology RN (Oncology Registered Nurse), Relief Charge Nurse, CCU Nurse (Cardiac Care Unit Nurse), CCU Nurse (Coronary Care Unit Nurse)*

This occupation has a number of points of entry, be it as an incumbent licensed practical nurse (LPN) or certified nurses aide (CNA) who engage in additional training, or for an emerging worker who studies directly on the RN track in an accredited nursing program. Once at the registered nurse level, an RN can study for and take specialty certification tests as described in Section 6.2.5.

With regards to a meaningful career track, The High School Graduate.com offers the following advice to emerging workers considering the nursing profession:

> "Nurses have an opportunity to progress up the career ladder from licensed practical nurse (LPN) to associate degree (AD) and diploma preparation, to baccalaureate (BSN) and advanced practice options at the master's level (MSN), including nurse practitioner programs (NP) or clinical specialist in a content area (such as gerontology). You may wish to become a nurse researcher or teach future nurses in a community college or a university setting."[20]

Understanding a wide range in levels of certification for RNs (associate's degree, bachelor's degree, post-graduate advanced certifications), the egr3estimates.xls spreadsheet in the SSI data packet indicates that an RN can expect an entry-level hourly wage of $16.73, and a mean wage of $21.49.

[20] Nursing: A Career for All Seasons. The High School Graduate.com. Accessed 29 Oct. 2005 <http://www.thehighschoolgraduate.com/editorial/NO/nursing.htm>.

6.4.4. Demonstration of demand

As discussed in Section 6.1., the occupation with largest job growth nationally is registered nurses (SOC 29-1111). The preliminary data supplied by the SSI data packet (egr3projections.xls) suggests this is also true for EGR-3, where the projected average annual openings due to *growth* are 120 positions. This is the largest number of positions for a specified occupation in the set of projections. Annual openings due to *replacements* are also in the top 10 of all specified occupations listed with a projected replacement rate of 110 per year.

The occupational projections using data from the EGR-3 data for each industry are shown in Section 10.6., along with underlying assumptions. This table also includes the NIWIB growth projections by industry. This data, along with replacement projections for registered nurses, was used in the completing the supply, demand, and shortage worksheets for registered nurses. Job replacement assumptions are included in Section 10.6.

Almost 3 out of 5 registered nursing positions were in hospitals, and the information supplied by the EGR-3 projection data indicated that registered nurses make up 23 percent of hospitals' staff. Locally, EGR-3 surveys and interviews (see below) found that 21-45 percent of the hospital staff are registered nurses. Using the EGR-3 projection data, the next largest group of RNs was employed in offices of physicians (12.7 percent), followed by nursing care facilities (8.9 percent), government agencies (5.2 percent), home healthcare services (3.2 percent), and educational services (2.2 percent). Nationally, approximately 1 in 5 RNs worked part-time, and nearly 1 in 10 held more than one job.[21]

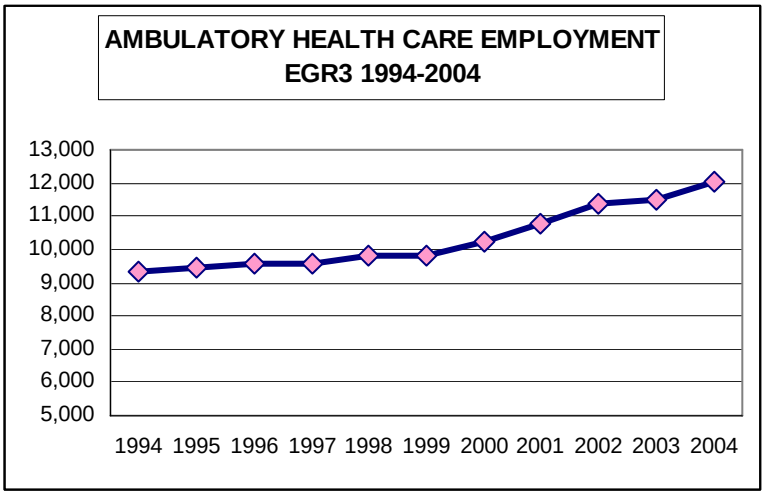
Industry employment data (CEW) for the major areas of Registered Nurse employment is shown below for the following subsectors: Ambulatory Care (NAICS 621), Hospital (NAICS 622), and Nursing Care and Residential Care Facilities (NAICS 623). The growth rates in these industries helped frame the expected local growth projections that follow.

[21] egr3projections.xls and supplemental information provided by BLS, *Occupational Outlook Handbook, 2004-05 Edition*, Registered Nurses. Accessed 26 Sept. 2005 at <http://www.bls.gov/oco/cg/cgs035.htm> .

Ambulatory Care (NAICS 621) employment has increased 29.3 percent from 1994-2004, and 12 percent from 2001-2004. Approximately 18.8 percent of registered nurses, or 1,010, are employed in offices of physicians, home health centers, and outpatient care centers.

AMBULATORY HEALTH CARE TOTAL (NAICS 621) EMPLOYMENT

County	2001	2004	Change
Adams	235	229	-6
Allen	7,577	8,638	1,061
De Kalb	362	348	-14
Grant	842	918	76
Huntington	232	282	50
LaGrange	137	158	21
Noble	288	254	-34
Steuben	200	224	24
Wabash	241	345*	104
Wells	460	479	19
Whitley	180*	174	-6
TOTAL EGR-3	10,754	12,049	1,295



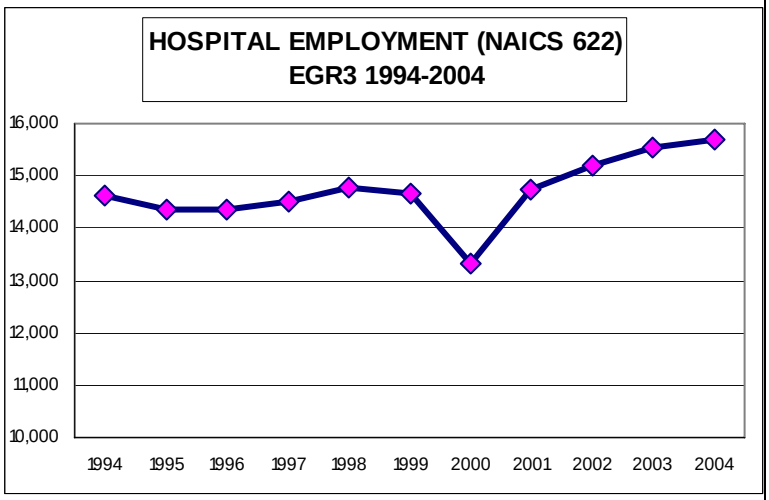
Source: BLS QCEW program and EGR-3 STATS INDIANA for EGR-3
* This indicates data was estimated using above sources.

Hospital (NAICS 622) employment has increased 7.3 percent from 1994-2004, and 6.5 percent from 2001-2004. Employment numbers by county, with the exception of Allen and Whitley Counties, are suppressed and not available. However, every county has at least one hospital. Five hospitals are independent and the rest have joined one of two major systems, either the Lutheran Health Network, part of Triad Hospital Corp., or the Parkview Health System, a nonprofit regional company based in Fort Wayne. Approximately 60 percent of registered nurses, or 3,240, are employed in hospitals, and hospitals in our survey (see below) responded that from 21 percent to 45 percent of their employees were registered nurses.

HOSPITAL (NAICS 622) TOTAL EMPLOYMENT

	1994	2001	2004
EGR-3 TOTAL	14,625	14,736	15,693
Change from 1994-04		7.3%	
Change from 2001-04			6.5%

HOSPITALS BY COUNTY	
Adams	Adams County Mem (ind)
Allen	Lutheran, Parkview, St Joseph (Lutheran), Dupont Med. Center (Lutheran), Parkview North, Parkview Orthopaedic Hospital, Rehabilitation Hospital
De Kalb	De Kalb Memorial (ind)
Grant	Marion General Hosp
Huntington	Parkview Huntington
LaGrange	Parkview Lagrange
Noble	Parkview Noble
Steuben	Cameron (ind); Angola Cancer Care
Wabash	Wabash County Hosp.
Wells	Bluffton Regional Med Center (Lutheran)
Whitley	Parkview Whitley

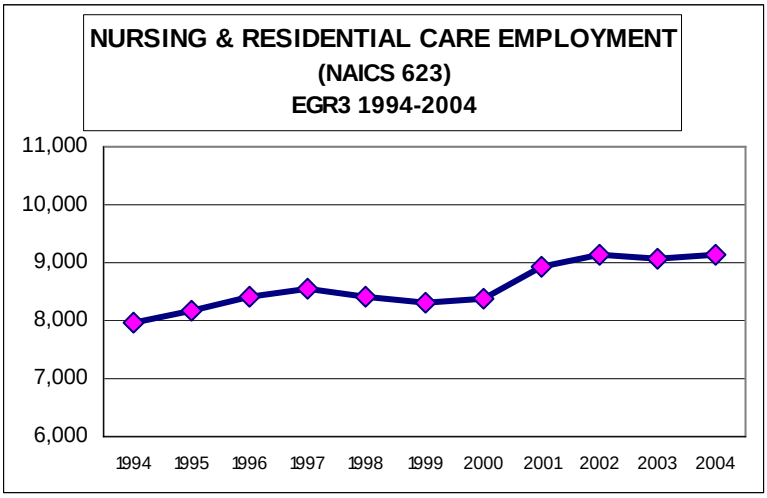


Source: EGR-3 STATS INDIANA for EGR-3

Nursing and Residential Care Facilities (NAICS 623) employment has increased 14.7 percent from 1994-2004, and 2.4 percent from 2001-2004. Approximately 8.9 percent of registered nurses, or 480, were employed in nursing care facilities and home health- care services in 2002 by egr3projections.xls.

NURSING & RESDENTIAL CARE TOTAL EMPLOYMENT

County	2001	2004	Change
Adams*	386	493	107
Allen	3,656	3,669	13
De Kalb	453	516	63
Grant*	1,108	1,136	28
Huntington	922	952	30
LaGrange	202	222*	20
Noble	487	416	-71
Steuben	188	259	71
Wabash	959	946	-13
Wells	312	303	-9
Whitley	259	237	-22
TOTAL EGR-3	8,932	9,149	217



Source: BLS QCEW program and EGR-3 STATS INDIANA for EGR-3
* This indicates data was estimated using above sources

A review of the InfoUSA data coupled with a county-by-county review of major health-care suppliers indicated that there were approximately 144 major employers in the Health Care and Social Assistance Industries, i.e. the industry areas where large numbers of registered nurses would be employed. These were the business that employed 50 to 4,999 employees. (In addition to these 144 employers, there were also 165 who employed 20-49; 241 who employed 10-19; 474 who employed 5-9 employees; and 895 with 1-4 employees; for a total of 1,919 business entities in the Health Care and Social Assistance Industries.) This is in line with the national data that show that almost 75 percent of all non-hospital health services establishments employ fewer than 10 employees.[22] In addition, registered nurses are found in other industries, as shown in Table 2 below. The InfoUSA data and county review indicated that the Health Care and Social Services major businesses, i.e. those with more than 49 employees, were distributed throughout the EGR-3 as follows:

[22] U.S. Department of Labor, BLS, *Career Guide to Industries 2004-05 Edition*, Health Services, on the internet at http://www.bls.gov/oco/cg/cgs035.htm (visited 9/26/05).

TABLE 1.		
COUNTY:	**PERCENTAGE WITHIN EGR-3 OF MAJOR HEALTH & SOCIAL SERVICE EMPLOYERS**	**MAJOR EMPLOYERS** *(for a list of all Health and Service Employers in this category, reference Section 10.6.1.)*
Adams	2.8%	Adams County Memorial Hospital, Berne Medical Center
Allen	48.6%	Parkview Health System, Lutheran Hospital, VA Northern Hospital, FW Orthopedics, Orthopedics Northeast, FW Cardiology, Heart Center, Park Center, Easter Seals ARC, AWS, Lutheran Homes, St. Anne Home
De Kalb	5.6%	De Kalb Memorial Hospital, Betz Nursing Home, Laurels
Grant	13.9%	Marion Gen. Hospital, Wesleyan Health Care, Wesley Heights, Marion Family Practice, Fastrack, Colonial Oaks Health Care
Huntington	4.2%	Parkview Huntington Hosp., Miller's Manor,
LaGrange	2.8%	Lagrange Community Hosp., Miller's Manor, Life Care Center of Lagrange
Noble	6.3%	Parkview Noble Hosp., Sacred Heart Home
Steuben	2.8%	Cameron Hosp, Angola Cancer Care, Northern Lakes Nursing & Rehab
Wabash	5.6%	Wabash County Hosp, Wabash Skilled Care Center
Wells	4.2%	Bluffton Regional Med Center, Christian Care Retirement Comm, Ossian Health Care
Whitley	2.8%	Parkview Whitley Hosp, Parkview Whitley Medical Plaza, Miller's Manor

Based on EGR estimates data, in 2002, there were approximately 5,080-5,440 registered nurses in EGR-3 in all industries. The following employment numbers of registered nurses in 2002 are from the EGR Estimates Panel 2 employment for the EGR-3 area:

TABLE 2. PUBLISHABLE EMPLOYMENT AND WAGES BY INDUSTRY, 2002			
NAICS	**INDUSTRY**	**EMPLOYMENT**	**MEAN WAGE, 2002**
561	Administrative and Support Services	50	$48,261
611	Educational Services	100	$32,998
621	Ambulatory Health Care Services	1,000	$41,753
622	Hospitals	3,230	$46,004
623	Nursing and Residential Care Services	380	$40,410
624	Social Assistance	30	$35,129
999	Public Administration	290	$50,345

Based on interviews with six of the leading regional health-care institutions, all six indicated the registered nurses accounted for 21 percent to 45 percent of their employees, or were at least the largest occupation in their business.

One business identified a 12-percent vacancy rate in the number of RN openings, another 4.5 percent, and a third reported they were at full strength.

Specialized nursing, such as advanced certifications in cardiovascular, orthopedics, trauma, neurosciences or cancer, as well as technology proficiency, such as electronic file management skills were areas in the registered nurse occupation that were of emerging importance or of critical importance to the competitiveness and future success of these businesses.

The overwhelming demand for registered nurses makes this one of the less-sensitive occupations. However, as indicated in Section 6.1., the relative strength or weakness of the regional economy is a significant driver of demand for registered nurses.

6.4.5. Skill requirements

The O*Net description for registered nurses (SOC 29-1111) largely fits the described need per the industry surveys conducted in October 2005.[23] 58 percent of the O*Net respondents indicated that a bachelor's degree (Bachelor of Science in Nursing) was necessary, and that proportion appears to be appropriate per the responses gathered. Of the O*Net respondents, 40 percent said that "some college" was necessary, which we will take to mean associate's degrees. Our research indicates that the rough 3:2 split of bachelor's versus associate's degree requirements is adequate, but nearly every regional industry expert indicated a desire for higher levels of academic rigor in their nursing workforce.

ACT, through its WorkKeys site, suggests that a registered nurse (SOC 29-1111.00) should have WorkKeys skill assessment scores at the following levels:

Title/O*NET Number/Career Cluster/Career Area		Applied Math	Applied Technology	Listening	Locating Information	Observation	Reading for Information	Teamwork	Writing
Registered Nurses	**Median Profile**	**5**	**3**	**4**	**4**	**4**	**5**	**4**	**3**
	Range	3-6	3-3	3-5	3-6	3-6	3-6	3-5	2-5
29-1111.00 S W	Number of Jobs in the median	23	1	27	17	22	26	22	18

One large, Fort Wayne-based regional medical system indicated that associate's degreed nurses were not facing a severe shortage, likely due to the nursing education partnerships already established in Northeast Indiana. Bachelor's degreed nurses, and nurses with post-bachelor certifications, were in critical demand. Those specific certifications include:

- Cardiovascular – Per the CVN Board Certification process administered by the American Board of Cardiovascular Nurse Credentialing[24]

[23] http://online.onetcenter.org/link/summary/29-1111.00
[24] http://www.accn.net/ABCVN%20Home%20Page.htm

- Orthopedic – The Orthopedic Nurse Certified (ONC) credential per the National Association of Orthopedic Nurses[25]
- Trauma – Completion of the Trauma Nurses Core Course (TNCC) per the Emergency Nurses Association coursework[26] or the Ambulatory Care Nursing certification (ANCC)[27]
- Neuroscience – Certified Neuroscience Registered Nurse (CNRN) certification per the American Board of Neuroscience Nursing[28]
- Cancer – Oncology Certified Nurse (OCN) certification per the Oncology Nursing Certification Corporation[29]

Other specialty certifications may emerge as we widen our dialogue further, but we believe they will be limited to the subjects listed above.

6.4.6. Skill gaps

The skill gaps noted in interviews with health systems and health-care providers are at the registered nurse and RN-specialty certification level. Specifically, one industry expert suggested that the major skill gaps come in the areas of biology and critical thinking. They added that the extra education coming from a higher-educated nurse (a four-year degreed nurse as opposed to a two-year degreed nurse) results in a stronger scientific foundation, which results in a deeper understanding of medicine and more effective patient care.

As Section 6.2.2. indicates, the prevalence of the skill gaps differs between Allen County and the surrounding counties. Allen County largely needs more RNs with specialty certifications. The outlying counties (minus Adams County, for the reason stated above) require degreed RNs, be they two- or four-year schooled.

Registered nurses largely fill the role of being the health-care provider's direct interaction with the patient. Thus, the shortage of health-care providers, registered nurses and otherwise, negatively impacts the quality of patient care in our communities. As nurses (the vast majority of which are registered nurses) make up as much as 45 percent of the workforce at some of our health institutions, it is critical to keep the nursing profession full, and with a qualified workforce. As the nursing shortage charted in Section 6.2.1. grows, these issues will only be exacerbated.

One of the regional experts interviewed corroborated Ms. Aiken's assertion about hiring foreign nurses to fill their workforce gaps. This example is particularly illustrated as health-care providers have no choice but to provide direct patient care, regardless of the

[25] http://www.orthonurse.org/certification/general.cfm
[26] http://www.ena.org/catn_enpc_tncc/tncc/aboutcourse.asp
[27] Test No. 32 from American Nurses Credentialing Center referenced at Specialty Nursing Practice Certifications. American Nurses Credentialing Center. Accessed 1 Nov. 2005 <http://www.nursingworld.org/ancc/certification/certs/specialty.html/>
[28] http://www.aann.org/credential/index.htm
[29] http://www.oncc.org/

workforce shortages. If that registered nursing workforce does not come from local talent, it will have to come from other regions and countries.

7. Target Industry: Advanced manufacturing

As much as the health-care delivery industry surfaced in the data-driven phase of our project, the advanced-manufacturing field (ands its target occupation) surfaced during our LEDO interviews. Clearly, Northeast Indiana's economic roots are in manufacturing, and this industry is making strides in adapting to the ever-evolving global environment.

7.1. Overview

Northeast Indiana, much like the rest of Northern Indiana, is a manufacturing-intensive region. Whereas "The Region" of Northwest Indiana traditionally has been known for steel and the South Bend-Elkhart-Warsaw "Michiana" region is known for recreational homes/manufactured housing (RV/MH) and orthopedic manufacturing, Northeast Indiana has a reputation for being aligned with the automotive industry, either as a manufacturer of automobiles (through the former International Harvester manufacturing center or the newer General Motors truck assembly plant, both of which are in Fort Wayne, or General Motors' stamping and tool plant in Marion) or as a manufacturer of auto parts, which is done all over Northeast Indiana. While there are elements of truth in all stereotypes, such a simplistic definition of Northeast Indiana is insufficient.

At present, there is no question that manufacturing drives the Northeast Indiana economy. The conversation begins, though, when one looks at the industry mix of manufacturers. Currently, IWD's SSI interactive Web tool tells us that the following subsets of NAICS codes account for 5 percent or more of Northeast Indiana's manufacturing labor base of 89,374:

- Plastics & Rubber Products Manufacturing (including extruded products, injection molded products and fiberglass) – 11%
- Primary Metal Manufacturing (including steel production) – 8%
- Fabricated Metal Products Manufacturing (including heavy equipment manufacturing and architectural steel products) – 13%
- Machinery Manufacturing – 9%
- Computer & Electronics Products Manufacturing – 8%
- Transportation Equipment Products Manufacturing (including both auto parts and RV/MH) – 22%

Whereas Michiana's RV/MH and orthopedics industries have been on extended positive business cycles, the core industries of Northeast Indiana have not been so fortunate. Our industry mix has lent itself to a negative industry shift share over the last 10 years, a downturn our region's LEDOs have valiantly worked to overcome with pockets of impressive success.

In recent years, the continued weakness of the domestic auto industry (symbolized most recently by the October 8, 2005, business-reorganization filing under Chapter 11 of the U.S. Bankruptcy Code by Delphi Automotive, a very large Indiana employer[30]) has led Northeast Indiana manufacturers to capitalize on their core skills of "bending metal" by moving beyond their auto industry foundation into other fields. Some have ventured into orthopedic products, some into heavy equipment manufacturing. And some foreign auto industry suppliers have located into Northeast Indiana to take advantage of our native skill sets.

The Northeast Indiana's SSI project community leadership acknowledged this core competency and encouraged building off of it in new and different directions. They recognized the LEDO survey response of manufacturing as both a foundational and target industry area by instructing SSI staff to focus their attention on companies that had continuously grown their businesses through the current down cycle in American manufacturing. The presumption was that these business experiences could be used as best-practice examples for the rest of our region's manufacturers.

Even in the current manufacturing industry shakeout, there are companies in Northeast Indiana who have found success with a combination of smart business practices resulting from a deliberate selection of market niches, wise alignment of employee talent and strategic implementation of technology. We deliberately solicited participation from only these "growth manufacturers," whom (not surprisingly) also fit the general definition of "advanced manufacturers."

Our primary research tells us that advanced manufacturing appears to take two forms from a workforce point of view. On one hand, there is a need for an empowered, multi-skilled, shop floor "cell manager," who can handle every necessary task in his/her workspace. We offer that occupation in Section 7.2.

The second form is the emerging need in advanced manufacturing, much like within the other industries researched, for advanced utilization of technology to improve processes and product quality. More and more Northeast Indiana manufacturers are implementing what once were just buzzwords: Lean Manufacturing, kaizen, Six Sigma. These process improvements save companies money and gain greater productivities from their employees. These advances are needed improvements for EGR-3's global competitiveness, but we will need a pool of competitive industrial engineers to achieve this success on a wide scale. This will be further outlined in Section 7.3.

Together, these two key occupations will populate the manufacturing landscape of EGR-3 and beyond. Our population possesses the core aptitudes to compete in the global environment; adapting to these new occupations will allow us to keep manufacturing in our stable of foundational industries.

[30] Reorganization Home. Delphi Corporation. Accessed 27 Oct. 2005 <http://www.delphi.com/reorganization/home/>.

7.1.1. Industry Reports

The National Association of Manufacturers (NAM) commissioned Deloitte & Touche in 2003 to research and write "Keeping America Competitive: How a Talent Shortage Threatens U.S. Manufacturing." In this report, they acknowledge a 2001 report indicating that 80 percent of American manufacturers have either a moderate or severe shortage in skilled workforce.[31] The NAM suggests that American manufacturing will succeed only if it does the following:[32]

- Compete less on cost than on product design, productivity, flexibility, quality and responsiveness to customer needs – and tailor employee skills accordingly
- Orient employees at all levels to the advanced technology required for manufacturers to succeed in the global marketplace
- Prepare for the oncoming retirement of Baby Boomers that is projected to require 10 million new, skilled manufacturing workers by 2020. Even with technology improvements and relaxed immigration standards, the NAM projects a shortage of 4 million to 6 million skilled workers.[33]

To accomplish these goals, NAM suggests a number of possible areas for improvement – both inside and outside of the walls of industry. These suggestions will be tested in the Root Causes' and Solutions' phases of this project. For the purposes of this report, we will emphasize the need to build flexible, robust skills, a technology orientation and a need to be ready for the losses in workforce to come. All of these issues feed into the demand facing Northeast Indiana's manufacturers.

The biggest revelation of the NAM report, however, came with the news that the most significant shortage by occupation area came not with highly-degreed personnel like engineers or finance staff but with machinists and skilled tradesmen. According to the results of the survey of manufacturers underlying the report, over 42 percent of respondents have "serious shortages" of craft workers and over 41 percent have similar problems with machinists as opposed to 20 percent for engineers. Only 23.2 percent of respondents reported "no shortage" of craft workers, and 24.7 percent reported the same for machinists versus 34.8 percent for engineers.[34] It is reasonable to surmise that the larger machinist/craftsmen population needs, combined with the lack of educational output in these areas, create the dire shortage situations for these blue collar occupations.

The National Council of Advanced Manufacturing conducted a symposium in June, 2005 at their "Advanced Manufacturing Leadership Forum" and, through their Workforce Education & Training Forum Issue Team Workshop, issued a set of "Policy

[31] National Association of Manufacturers, p. 5.
[32] Ibid, p. 1.
[33] Ibid, p. 6.
[34] Ibid, p. 7.

Recommendations & Next Steps." This document will be more fully explored in Section 7.2.3. of this report.

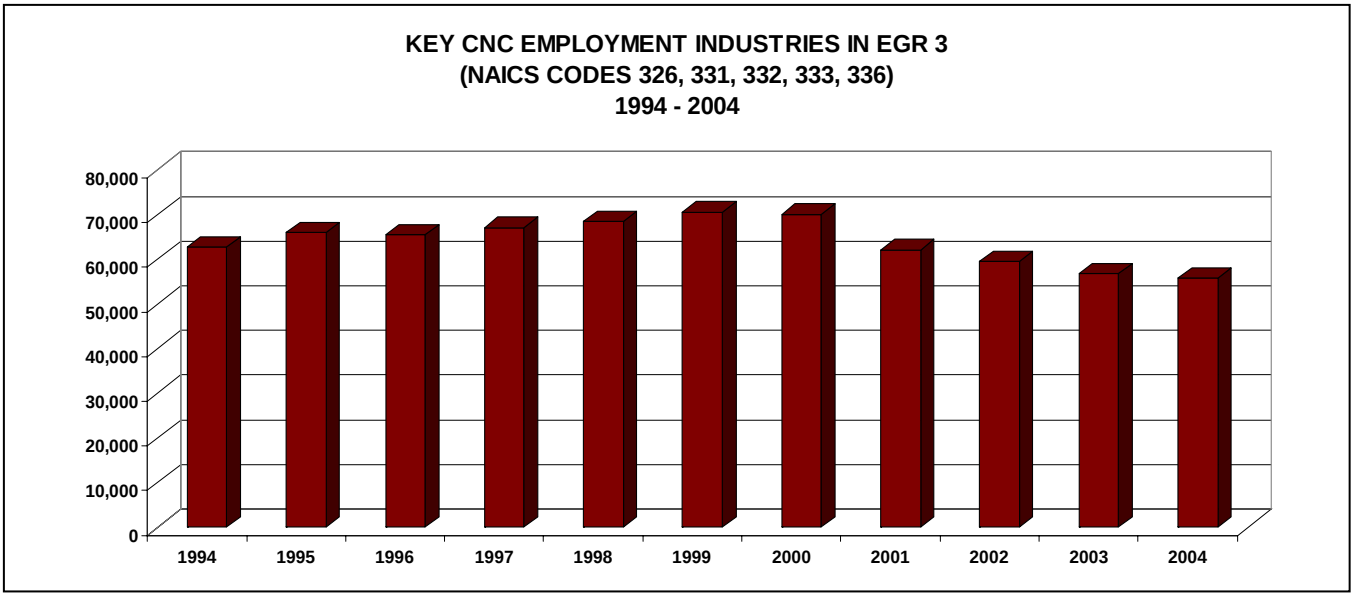
Lastly, the Industrial College of the Armed Forces published a 1993 executive research paper, "A Road Map for Human Resources Development to Meet the Requirements of the U.S. Manufacturing Industry by 2005," outlining its concerns about the perceived declining caliber of American manufacturing and offering a number of human capital improvement recommendations in order to reestablish the preeminence of our manufacturing base by 2005. The outcome of the report and its proposed vision is not known, but we should look to its expertise, which included evaluations of both the Japanese and German career training systems, for guidance. Specifically, it offers the following recommended course of action – which looks remarkably similar to Indiana's SSI project, as follows:[35]

1. Performance of a periodic assessment and forecast of the status of the manufacturing industry.
2. Identification of broad skill requirements for key manufacturing industries.
3. Establishment of those skill requirements and manufacturing industry needs as one of the foundations for a new educational policy.
4. Creation and implementation of active worker training plans by the U.S. government working in concert with industry.
5. Provision of feedback by American manufacturing industries to relevant planning and policy entities in terms of work skill requirements and changes.

We keep this map in mind with the firm belief that if manufacturing in Northeast Indiana is ever to approach the level of success that it has enjoyed in years' past, it will be because of strategic plans and demand-driven partnerships that arise from workforce initiatives like SSI.

[35] Col. Scoop Cooper and Lt. Col. Elaine Parker, USAF for the National Defense University's Industrial College of the Armed Forces. "A Road Map for Human Resources Development to Meet the Requirements of the U.S. Manufacturing Industry by 2005," p. 25.

7.1.2. EGR-3 Demographics



Illustrating the critical importance to the economic base of EGR-3, all five of the primary three-digit NAICS code industries included as target for CNC skills enhancement have 4th Quarter, 2004 Location Quotients greater than 2.6:

Plastics and Rubber Products	4.42
Primary Metal Manufacturing	5.67
Fabricated Metal Product Manufacturing	2.98
Machinery Manufacturing	2.64
Transportation Equipment Manufacturing	4.21

Clearly, if these industries are to be competitive in the future, they will have to produce more with less. The collective 1994-2004 Industry Mix Shift-Share component was a negative 11,185 jobs for EGR-3.

Among the five industries, only Machinery Manufacturing had a positive Industry Mix Shift-Share over this ten-year period (2,626).

Employment in these five manufacturing related NAICS codes (#326, #331, #332, #333 and #336) fell an combined 11% in EGR-3 between 1994 and 2004. The remainder of Indiana also experienced a decrease of employment in these industries of an aggregate 4% over the same time period.

Industry-specific demographic information on these five industries follows:

Plastics and Rubber Products (NAICS #326)	Primary Metal Manufacturing (NAICS #331)	Fabricated Metal Product Manufacturing (NAICS #332)
• 4th Q 2004 Average Weekly Wage = $766.09 • 1st Q 2001 Average Weekly Wage = $680.81 • 2004 Average Annual Wage = $38,586 • 1994 Average Annual Wage = $28,753 • 4th Q 2004 Total Employment = 9,304 • 1st Q 2001 Total Employment = 11,071 • 2004 Average Annual Employment = 9,529 • 1994 Average Annual Employment = 10,373 • Occupational Base Year Employment (2002) = 9,880 • Projected Employment in 2012 = 11,660 • 4th Q 2004 Number of Establishments = 90 • 1st Q 2001 Number of Establishments = 98 • 2004 Number of Establishments = 95 • 1994 Number of Establishments = 92 • Info USA lists 74 establishments • 4th Q 2004 LQ = 4.42 • 1st Q 2001 LQ = 4.46 • 1994 Location Quotient = 4.56 • 1994- 2004 Employment Change = -844 • 1st Q 2001 to 4th Q 2004 job change = -1,767 • 2001-2004 Shift-Share Regional Jobs Shift = -374 • 2001-2004 Shift-Share Industry Jobs Mix = -1,601 • 1994-2004 Shift-Share Regional Jobs Mix = -250 • 1994-2004 Shift-Share Industry Jobs Mix = -2,142	• 4th Q 2004 Average Weekly Wage = $958.87 • 1st Q 2001 Average Weekly Wage = $834.72 • 2004 Average Annual Wage = $47,479 • 1994 Average Annual Wage = $35,007 • 4th Q 2004 Total Employment = 6,962 • 1st Q 2001 Total Employment = 9,330 • 2004 Average Annual Employment = 6,991 • 1994 Average Annual Employment = 8,209 • Occupational Base Year Employment (2002) = 8,440 • Projected Employment in 2012 = 9,990 • 4th Q 2004 Number of Establishments = 51 • 1st Q 2001 Number of Establishments = 56 • 2004 Number of Establishments = 55 • 1994 Number of Establishments = 61 • Info USA lists 62 establishments • 4th Q 2004 LQ = 5.67 • 1st Q 2001 LQ = 5.79 • 1994 Location Quotient =4.48 • 1994- 2004 Employment Change = -1,218 • 1st Q 2001 to 4th Q 2004 job change = -2,368 • 2001-2004 Shift-Share Regional Jobs Shift = -356 • 2001-2004 Shift-Share Industry Jobs Mix = -2,188 • 1994-2004 Shift-Share Regional Jobs Mix = +714 • 1994-2004 Shift-Share Industry Jobs Mix = -3,157	• 4th Q 2004 Average Weekly Wage = $751.99 • 1st Q 2001 Average Weekly Wage = $642.44 • 2004 Average Annual Wage = $36,794 • 1994 Average Annual Wage = $26,598 • 4th Q 2004 Total Employment = 11,742 • 1st Q 2001 Total Employment = 12,694 • 2004 Average Annual Employment = 11,566 • 1994 Average Annual Employment = 11,813 • Occupational Base Year Employment (2002) = 11,630 • Projected Employment in 2012 = 12,600 • 4th Q 2004 Number of Establishments = 300 • 1st Q 2001 Number of Establishments = 297 • 2004 Number of Establishments = 315 • 1994 Number of Establishments = 300 • Info USA lists 332 establishments • 4th Q 2004 LQ = 2.98 • 1st Q 2001 LQ = 2.70 • 1994 Location Quotient = 2.50 • 1994- 2004 Employment Change = -247 • 1st Q 2001 to 4th Q 2004 job change = -952 • 2001-2004 Shift-Share Regional Jobs Shift = +792 • 2001-2004 Shift-Share Industry Jobs Mix = -1,983 • 1994-2004 Shift-Share Regional Jobs Mix = +360 • 1994-2004 Shift-Share Industry Jobs Mix = -2,369

Machinery Manufacturing (NAICS #333)	Transportation Equipment Manufacturing (NAICS #336)
• 4th Q 2004 Average Weekly Wage = $879 • 1st Q 2001 Average Weekly Wage = $746 • 2004 Average Annual Wage = $42,095 • 1994 Average Annual Wage = $32,730 • 4th Q 2004 Total Employment = 7,918 • 1st Q 2001 Total Employment = 10,007 • 2004 Average Annual Employment = 7,832 • 1994 Average Annual Employment = 8,295 • Occupational Base Year Employment (2002) = 8,950 • Projected Employment in 2012 = 8,370 • 4th Q 2004 Number of Establishments = 210 • 1st Q 2001 Number of Establishments = 220 • 2004 Number of Establishments = 221 • 1994 Number of Establishments = 221 • Info USA lists 208 establishments • 4th Q 2004 LQ = 2.64 • 1st Q 2001 LQ = 2.60 • 1994 Location Quotient = 2.02 • 1994- 2004 Employment Change = -463 • 1st Q 2001 to 4th Q 2004 job change = -2,089 • 2001-2004 Shift-Share Regional Jobs Shift = -109 • 2001-2004 Shift-Share Industry Jobs Mix = -2,168 • 1994-2004 Shift-Share Regional Jobs Mix = +925 • 1994-2004 Shift-Share Industry Jobs Mix = 2,626	• 4th Q 2004 Average Weekly Wage = $1,032.55 • 1st Q 2001 Average Weekly Wage = $857.19 • 2004 Average Annual Wage = $50,192 • 1994 Average Annual Wage = $38,573 • 4th Q 2004 Total Employment = 19,910 • 1st Q 2001 Total Employment = 21,880 • 2004 Average Annual Employment = 19,936 • 1994 Average Annual Employment = 24,026 • Occupational Base Year Employment (2002) = 20,570 • Projected Employment in 2012 = 20.510 • 4th Q 2004 Number of Establishments = 118 • 1st Q 2001 Number of Establishments = 119 • 2004 Number of Establishments = 123 • 1994 Number of Establishments = 126 • Info USA lists 78 establishments • 4th Q 2004 LQ = 4.21 • 1st Q 2001 LQ = 4.07 • 1994 Location Quotient = 3.98 • 1994- 2004 Employment Change = -4,090 • 1st Q 2001 to 4th Q 2004 job change = -1,970 • 2001-2004 Shift-Share Regional Jobs Shift = +80 • 2001-2004 Shift-Share Industry Jobs Mix = -2,462 • 1994-2004 Shift-Share Regional Jobs Mix = -1,531 • 1994-2004 Shift-Share Industry Jobs Mix = -6,143

7.2. Target occupation: CNC Operators, Machinists, Industrial Machinery Mechanics, and Maintenance (CNC-MIMMs)

Regional industry research indicates that the NAM concept of robust, flexible skills directly applies to the world of manufacturing (both metal and plastics products) in Northeast Indiana. Rather than promote a single occupational code, we propose to advance an evolving hybrid occupation combining the technical elements of CNC-equipment operation and machine maintenance. This new occupation, the CNC-MIMM, would act more as a “work area manager” or “cell manager” on the floor, responsible for all aspects of production within his/her workspace.

The realignment of the shop floor is helping successful manufacturers optimize the efficiency of both their human resources and equipment. A single, multitasking work area manager with total understanding and capacity to manage the workspace can effectively mitigate the need to have separate employees in the following fields:

- CNC programmer
- CNC operator
- Tool setter
- CNC coordinator
- Setup technician

- Quality systems technician
- Maintenance staff

Workforce size can be grown to scale in this business model. If new equipment is procured, a proportional number of staff can be hired. In the alternative business model, a larger proportion of staff would have fewer skill sets to be applied across a larger workspace.

First-person evidence has shown that a large number of successful EGR-3 manufacturers operate in this newer business model. Even the larger employers are keeping this approach as they grow. One EGR-3 CNC manufacturer has grown to over 500 employees in less than 10 years, a demonstrable sign that the effective use of technology is an indicator of business growth, not necessarily low workforce levels.

7.2.1. Occupational description

The O*Net SOCs and occupational descriptions (with sample job titles where offered) for this CNC-MIMM hybrid likely will include:

- **Industrial Machinery Mechanics** (49-9041) - Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.
  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $15.00, and the median wage is $24.33.

- **Maintenance and Repair Workers, General** (49-9042) - Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.
  - *Sample of reported job titles: Maintenance Technician, Maintenance Mechanic, Maintenance Supervisor, Maintenance Electrician, Maintenance Engineer, Process Technician, Equipment Engineering Technician, Building Maintenance Mechanic, Building Mechanic, I And C Technician (Instrument And Controls Technician)*
  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $11.03, and the median wage is $18.17.

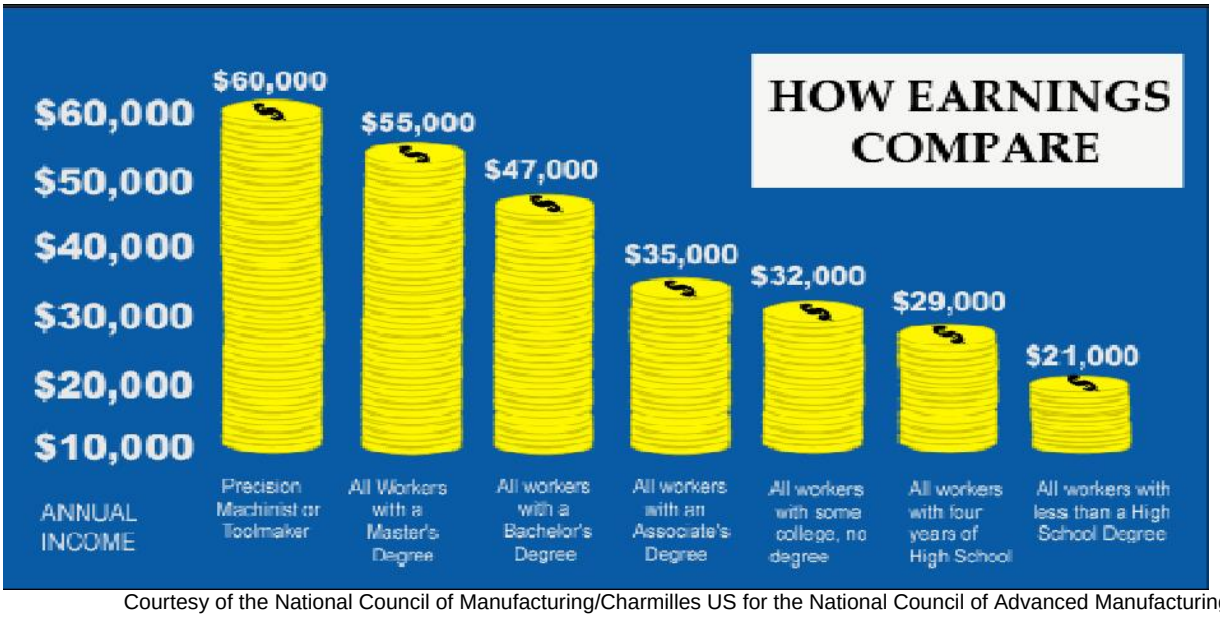
- **Maintenance Workers, Machinery** (49-9043) - Lubricate machinery, change parts, or perform other routine machinery maintenance.

  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $12.89, and the median wage is $21.87.

- **Computer Controlled Machine Tool Operators & Tenders, Metal & Plastic** (51-4011) - Set up and operate numerical control (magnetic- or punched-tape-controlled) machine tools that automatically mill, drill, broach, and ream metal and plastic parts. May adjust machine feed and speed, change cutting tools, or adjust machine controls when automatic programming is faulty or if machine malfunctions.
  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $10.67, and the median wage is $16.00.

- **Machinists** (51-4041) - Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, shop mathematics, metal properties, layout, and machining procedures.
  - *Sample of reported job titles: Machinist, Machine Operator, Machinist Tool And Die, Maintenance Specialist, Set-Up Machinist, Utility Operator, Maintenance Machinist, Production Machinist, Maintenance Technician, MTD (Mold Tooling Designer)*
  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $10.84, and the median wage is $17.61.

From a national point of view, income possibilities for such a hybrid position are promising, as the following National Council of Advanced Manufacturing graphic indicates:



Courtesy of the National Council of Manufacturing/Charmilles US for the National Council of Advanced Manufacturing

The data available by industry occupation in the SSI data packet's EGR-3projection.xls/panel 2 file does have wage information available by occupational classification, but this did not coincide with the wage levels given by the employers during the surveys. This may be simply because this occupation is dispersed among a number of SOC codes making it is difficult to precisely define the CNC-MIMM position given its current occupational description. Consequently, we believe the egr3estimates.xls spreadsheet is not as useful in determining wages.

Anecdotal evidence from an industry training provider indicates that **entry-level wages for this hybrid occupation are roughly $17.00 per hour. A formally-trained, certified CNC work-space manager who has completed a four-year apprenticeship would earn hourly wages of roughly $23.00**. Local employer information indicates that the CNC-MIMM position has a mean wage of $40,664. The evidence stands up to logic since an employee with a greater number of applicable skills is worth more to the employer.

Both this industry and occupation can be highly sensitive to outside economic pressures. Some of those pressures include outsourcing, offshoring, industry cyclical downturns and, if the worker is not utilized effectively, technological advances. However, many (if not all) of these sensitivities can be minimized through the efficiencies that a well-educated, cross-disciplinary work-space manager can offer. As evidence, the same industry trainer who offered our wage insight contends that a fully-trained, hybrid work-space manager in a CNC-manufacturing center can replace 10 employees in a standard manufacturing facility.

CNC-production workers learn in apprenticeship programs, informally on the job, and in secondary, vocational, or post-secondary schools. Many entrants have previously

worked as machinists or machine setters, operators, and tenders. Some programs are a short (75 hour) "crash course," and others involve additional formal schooling and a four-year apprenticeship. A certification from the National Institute of Metalworking Skills (NIMS), gained after completing some of the more extensive education programs, offers formal recognition of both schooling and skill, a gateway to additional career options and income. An associate degree path is available, certifying additional expertise beyond NIMS.

A select few CNC manufacturers have their own formal training programs, ensuring that employees learn company procedure on company equipment. (CNC equipment, while having similarities, differs from brand to brand.) Formal company training programs are seen in larger advanced manufacturers, while smaller employers conduct their training on the job, if at all.

The Precision Machined Products Association (PMPA) outlines a career path for those who do not have formal schooling. Should those entering the CNC field want to learn through an informal apprenticeship program, they can expect the following career ladder:[36]

- Helper or learner
- Machine operator
- Machine setup
- Team leader
- Supervisor
- Management

Another industry group, the Precision Metalforming Association Educational Foundation, offers the following career path to a high school graduate. This list offers an even broader set of career and income options, again reflecting on-the-job training as a means to develop multiple skills:[37]

- Level One
  - Equipment Operator
- Level Two
  - Set-up Technician
- Level Three
  - Quality Assurance
  - Supervisor
  - Machine Maintenance
  - Tool & Die Maker
  - Tool Designer
  - Computer Network Technician

[36] PMPA – Career Information – Focus on Your Future. Precision Machined Products Association. Accessed 27 Oct. 2005 < http://www.pmpa.org/careers/focus.htm>.
[37] Students – Career Ladder. Precision Metalforming Association Educational Foundation. Accessed 27 Oct. 2005 < http://www.pmaef.org/student/ladder.htm>.

- Engineering & Research

At the same time, the PMPA encourages formal education, stating to those who are interested in a career in advanced manufacturing,

> "…only a few have the skills and abilities required to operate the complex technologies used today to produce components with extremely complex geometries and tight tolerances. In the truest sense, it is a profession that requires ongoing study and training.
>
> If you are in school, stay there to get a good grounding in the fundamentals. Take as many courses in math and science as you can. You'll also need good communication skills, and the ability to read part drawings will be a real plus. There are many sources for this training, including public schools, vocational or technical schools and community colleges."[38]

The BLS, in its online Occupational Outlook Handbook, says of computer-control programmers and operators,

> "Computer-control programmers and operators should have excellent job opportunities. Due to the limited number of people entering training programs, employers are expected to continue to have difficulty finding workers with the necessary skills and knowledge. …. Job growth in both occupations will be driven by the increasing use of CNC machine tools. Advances in CNC machine tools and manufacturing technology will further automate production, boosting CNC-operator productivity and limiting employment growth. The demand for computer-control programmers will be negatively affected by the increasing use of software that automatically translates part and product designs into CNC machine tool instructions."[39]

This insight from the BLS is important as it further demonstrates the need to build beyond CNC programming and into work-space management.

7.2.2. Demonstration of demand

In section 7.1, mention was made of Northeast Indiana's native skill sets. There has been a competency in the general CNC and tool-and-die occupations for generations in this area. While there has been a significant loss of jobs in the manufacturing sector during the last 10 years, there has also been a steady, even rapidly-growing need for highly-skilled, technically-competent employees. To demonstrate the demand in this area, the current employees and the current employers in EGR-3 have been examined. The interviews conducted by the NIWIB staff have also helped to frame this need. There are many indications that future U.S. economic success will rely on advanced

[38] PMPA – Career Information – Focus on Your Future.
[39] Computer-Control Programmers and Operators. U.S. BLS. Accessed 27 Oct. 2005 <http://www.bls.gov/oco/ocos286.htm>.

manufacturing, not the assembly lines of the past. To ensure that this new type of manufacturing flourishes in this area demands that EGR-3 train for innovation. EGR-3 must work to promote the concept of lifelong learning to area employers and employees, reflecting a constant state of readiness for new technology.

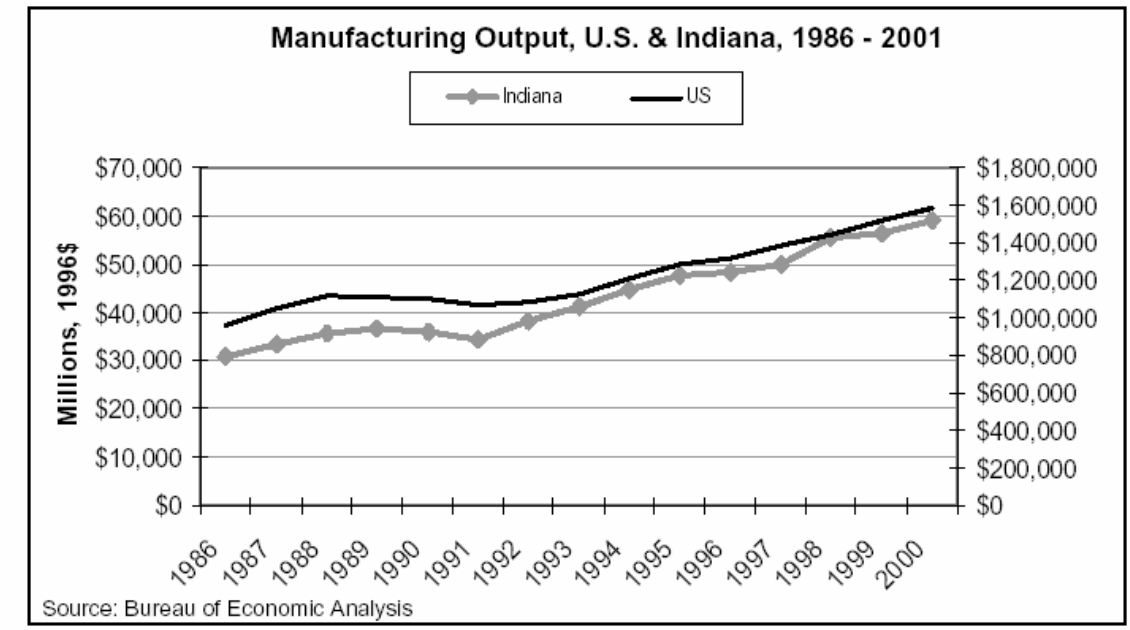
There were approximately 9,880 persons employed as CNC-MIMMs, and of these, 7,200 were employed in manufacturing. In addition, there were 140 additional persons employed in the Administration and Support areas (NAICS 56) as machinists or industrial machinery repair workers. These persons are most likely employed through temporary help agencies. The total of these employees or the positions they represent will form the basis for the new advanced-manufacturing positions in EGR-3.

CNC-MIMMS are predominantly employed in five NAICS categories: Plastics and Rubber Manufacturing (326), Primary Metal Manufacturing (331), Fabricated Metal (332), Machinery (333) and Transportation Equipment Manufacturing (336). These five areas accounted for over 83 percent of all CNC-MIMMs' employment in 2002. In 2004, total employment in these five subsectors was 55,854, which represented 16.4 percent of all jobs in the EGR-3 area.

CNC-MIMMs EMPLOYMENT IN THE MAJOR NAICS SUBSECTORS		
	2002 EGR-3 CNC-MIMMS Employment	Percent of CNC-MIMMS Employment to Industry Sub-sector Employment
Plastics and Rubber Manufacturing (326)	660	6.7%
Primary Metal Manufacturing (331)	940	11.1%
Fabricated Metal (332)	1,270	10.9%
Machinery (333)	1,120	12.5%
Transportation Equipment Manufacturing (336)	2,030	9.9%

Obviously, these industry subsectors are not only an important part of the EGR-3 workforce, but the CNC-MIMM positions signify a crucial and critical occupation.

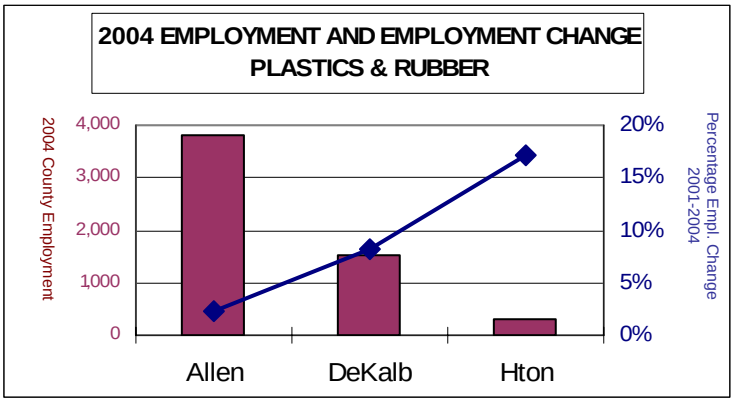
Additionally, as anyone familiar with manufacturing in the United States knows, the value of manufacturing is not easily summed up in a series of employment charts showing employment declines. While there is an attempt in the section immediately following to briefly describe the employment situation in EGR-3 by these five NAICS subsectors, it is important to note that manufacturing output is a key component of the national economy. It cannot be stressed enough that a strong manufacturing base in Indiana and in EGR-3, given its history, is essential. The following two graphs were taken from "What Indiana Makes, Makes Indiana: Analysis of Indiana Manufacturing, Executive Summary" by Thomas P Miller and Associates, January 2005. Manufacturing output, using inflation adjusted 1996 dollars, shows that this is a growing industry.



Higher productivity rates reduce the need for employees and result in fewer jobs, but the contribution of Indiana manufacturing to state and national growth has been rising.[40] The task is to structure manufacturing to take advantage of increased productivity, even as we acknowledge that jobs will most likely be lost to the advanced technologies that make it possible to compete and succeed.

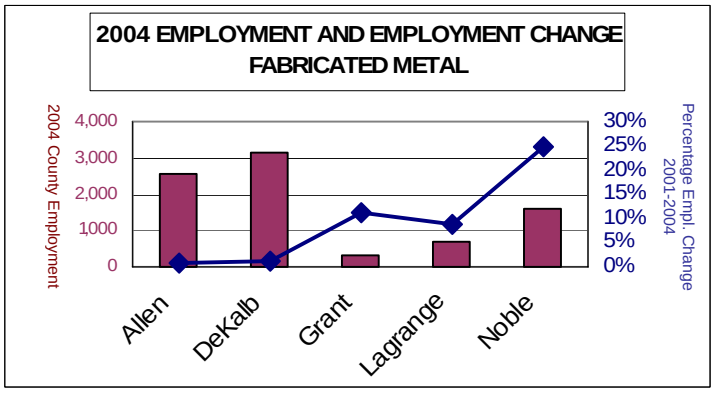
[40] "What Indiana Makes, Makes Indiana," p. 8.

Plastics and Rubber Manufacturing (NAICS 326) employment has decreased 8.1 percent from 1994-2004, and 10.4 percent from 2001-2004. Approximately 9 percent of CNC-MIMMs, or 660, are employed in the manufacture of plastics and rubber. Despite this decrease, not every county in EGR-3 has experienced the same loss. Allen County's employment in NAICS 326 increased 2.3 percent in the period 2001-2004, DeKalb's was up 8.1 percent, and Huntington 17.2 percent. It is possible to succeed in manufacturing in today's climate in the counties of EGR-3. Note that every county in EGR-3 had some percentage of its workforce employed in the Plastics and Rubber Manufacturing Sector.

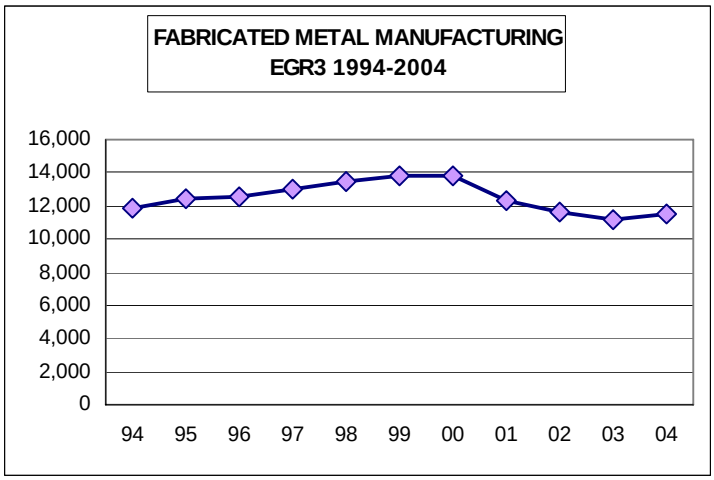


Primary Metals Manufacturing (NAICS 331) employment has decreased 14.8 percent from 1994-2004, and 20.5 percent from 2001-2004. Approximately 12.8 percent of CNC-MIMMs, or 940, are employed in the manufacture of primary metals. Every county had employment in this area with the exception of Adams County. Despite this decrease, not every county in EGR-3 has experienced the same loss. To the contrary, Whitley County has experienced a 6-percent increase. This area appears to be where many of EGR-3's advanced-manufacturing operations are located. The message may be "upgrade and hire educated CNC-MIMM operators" or success will be more difficult.

Fabricated Metal Product Manufacturing (NAICS 332) employment has decreased 10.9 percent from 1994-2004, and 6.1 percent from 2001-2004. However, the last two years have been relatively favorable for employment in fabricated metal manufacturing, as the second graph shows. Approximately 17.3 percent of CNC-MIMMs, or 1,270, are employed the manufacture of fabricated metal products. Despite the decrease in employment, not every county in EGR-3 has

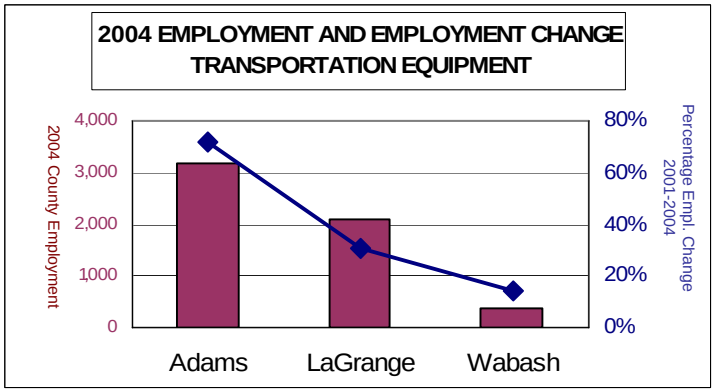


experienced the same loss. Noble County's employment in NAICS 332 was up 24.8 percent in the period 2001-2004, Grant County 11.3 percent, Lagrange 8.7 percent, DeKalb 1.2 percent, and Allen 0.8 percent. It is possible to succeed in manufacturing in today's climate in the counties of EGR-3. Note that every county in EGR-3 had some percentage of its workforce employed in the Fabricated Metal Product Manufacturing Sector.

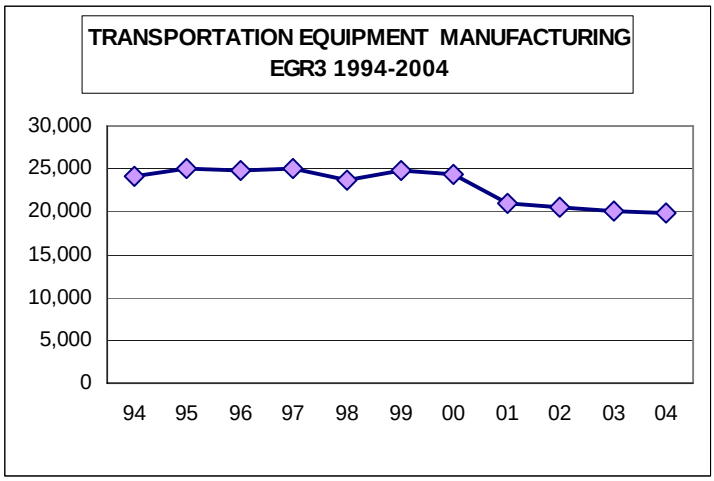


Machinery Manufacturing (NAICS 333) employment has decreased 5.6 percent from 1994-2004, and 17.5 percent from 2001-2004. Approximately 15.3 percent of CNC-MIMMs, or 1,120, are employed the manufacture of machinery. Every county had employment in this area. Despite the decrease in employment, not every county in EGR-3 has experienced the same losses. For example, DeKalb County experienced a 12.4 percent increase in employment from 2001-2004, while Huntington practically doubled its workforce in Machinery Manufacturing from 338 to 658.

Transportation Equipment Manufacturing (NAICS 336) employment has decreased 17 percent from 1994-2004, and 9.9 percent from 2001-2004. However, the rate of job loss has tapered off, as the second graph shows. Approximately 27.7 percent of CNC-MIMMs, or 2,030, are employed in the manufacture of transportation equipment. Despite this decrease, not every county in EGR-3 has experienced the same loss. Adams County's employment in NAICS 336 was up 71.6 percent in the period 2001-2004, Lagrange County 30.8



percent, and Wabash County 14.2 percent. Note that every county in EGR-3 had some percentage of its workforce employed in the manufacture of transportation equipment.



As identified in InfoUSA, there were 227 major employers (after adjustments for known closures) in EGR-3 in these five NAICS-code areas that had employment of greater than 49 persons (Appendix A). This is an incomplete story since the majority of employers in Fabricated Metal and Machinery Manufacturing are smaller shops, as can be seen in the following table:

EMPLOYMENT SIZE	PLASTICS & RUBBER MANF (326)	PRIMARY METAL MANF (331)	FABRICATED METAL MANF (332)	MACHINERY MANF (333)	TRANSPORTATION EQUIPMENT MANF (336)
1-4	8	5	92	42	14
5-9	8	5	57	31	5
10-19	12	9	58	42	4
20-49	11	13	53	46	5
50-99	12	5	34	26	9
100-249	14	13	27	13	15
250-499	5	8	10	4	19
500-999	3	3	1	1	4
1000+	1	0	0	0	3

Section 10.7. provides this employer information by county location. Every county in EGR-3 has at least 6 major employers in these five NAICS subsectors.

As the businesses listed in InfoUSA were reviewed for this section, there were many that had recently closed or relocated to another area or another country. Many manufacturing jobs that have exited this area were jobs that could be done by inexperienced laborers, such as assembly-line jobs. Jobs that remain need to be filled with employees who are educated in using technology machines. Businesses will have to have access to the CNC-MIMM employees of the near-future with the skill-sets described in Section 7.2.3. The need for this “new” CNC-MIMM position is evident not

only in the interviews and surveys done by NIWIB in EGR-3, but by studies such as the National Association of Manufacturers' survey on labor needs.[41]

NIWIB surveyed at least 16 employers who were manufacturers. Fourteen of these 16, or 88 percent, responded that the CNC-MIMMs' type occupation was critical to their business. (The two that made no mention of this type of occupation discussed the need for engineers in order to successfully compete.) Since the question "Which occupations are most critical to the competitiveness of your business?" was open-ended, the actual responses were: production machinist (1), tool and die (3), machine operator (1), maintenance mechanic (3), technical production workers (3), and CNC operators (5). When asked "What skill sets are unique to these emerging occupations?" (another open-ended question), the answers were all technology related: technical skills, high-end machinists, technology, computer skills, managing automation, high-tech tooling, computer knowledge, machine specific knowledge. Finally, when asked "If you cannot fill these emerging occupations with local workers, how will that affect your business?," four responses were offered:

- "We will go out of business"
- "We will struggle"
- "We will manage"
- "We will succeed without these employees"

Six said they would struggle, two would manage, one would go out of business, and two offered additional thoughts, specifically that they would relocate, and another would in-source their own training.

These responses underscore the message that technology skills are the must-have skills for today's manufacturing. These manufacturers know that the shops of the future need technology to succeed.

Another predictor of need has been the investment in technology in machine tool and metalworking equipment. In a report issued by the Association for Manufacturing Technology and American Tool Distributors Association, Midwest shops bought new technology totaling over $72 million in April 2005. Nationally, investment in this area was up almost 29 percent from April 2004.[42] In another related report, total machine-tool purchases in the U.S. for the first six months of 2004 increased 32 percent, the first rise in five years.[43]

The U.S. Department of Labor has stated that positions in advanced manufacturing are a high-growth area. In addition, specific information on the outlook of CNC-MIMMs'

[41] Benes, James. "Finding and training tomorrow's machinists." The State of American Manufacturing, a supplement to American Machinist. July 2005.
[42] "Technology Trends." American Machinist. July 2005.
[43] Grasson, Tom "Think U.S. Manufacturing is Dead? Think Again." American Machinist. Sept 2004.

types of positions is good.[44] Technology-skill needs are one sign, another is the current and upcoming retirement of many who currently perform the type of skills contained within a CNC-MIMM job. The BLS' Occupational Outlook has been relatively positive about the growth of "numerical tool and process control programmers" and the opportunities for tool and die, machinists, industrial machine repair mechanics, and CNC machine-tool operators due to retirements. Local businesses need these employees now, as evidenced by the NIWIB surveys. With at least 227 "major" employers (using the InfoUSA data above), it may not be unreasonable to assume that perhaps 88 percent of these 227 businesses would hire at least one new CNC-MIMM position today given the results of the NIWIB survey.

Keeping in mind that the new CNC-MIMM job necessary to compete in today's advanced manufacturing is not always entirely equal to the skill set of those retiring, and that the CNC-MIMM may possess the skills necessary to replace more than one employee, the SSI-EGR-3 projections are the best available local information on the number of current employees expected to retire. A slight adjustment was made to the SSI-EGR-3 projections to remove the nonproduction, general-maintenance and repair workers from the suggested growth and replacement projections to get a usable CNC-MIMM projection. The suggested total growth is small, 59 positions per year. Annual openings due to replacements is 153.

[44] U.S. Department of Labor, Employment and Training Administration, "High Growth Industry Profile." Accessed 28 Oct. 2005 <http://www.doleta.gov/BRG/Indprof/Manufacturing_profile.cfm>.

7.2.3. Skill requirements

The CNC-MIMM position is one that brings together a number of different SOC skill areas. The component ACT WorkKeys (all located via www.workkeys.com) sample skill-assessment scores for four of the five SOCs discussed above appear in the chart that follows. ACT did not provide WorkKeys' scores for Computer-Controlled Machine Tool Operators & Tenders, Metal & Plastic, SOC 51-4011.

Title/O*NET Number/Career Cluster/Career Area		Applied Math	Applied Technology	Listening	Locating Information	Observation	Reading for Information	Teamwork	Writing
Industrial Machinery Mechanics	**Median Scores**	**4**	**4**	**3**	**4**	**4**	**4**	**4**	**3**
	Range	3-7	3-6	1-5	3-6	3-6	3-7	3-7	1-5
49-9041.00 R N	Number of Jobs	344	327	96	362	256	358	191	116
Maintenance and Repair Workers, General	**Median Scores**	**4**	**4**	**3**	**4**	**4**	**4**	**4**	**2**
	Range	3-6	3-6	2-5	3-6	3-6	3-7	3-5	1-4
49-9042.00 R N	Number of Jobs	35	26	6	34	13	34	10	8
Maintenance Workers, Machinery	**Median Scores**	**3**	**4**	**3**	**4**	**4**	**3**	**3**	**3**
	Range	3-4	3-4	2-4	3-5	4-5	3-5	3-4	2-4
49-9043.00 R N	Number of Jobs	7	4	2	8	7	8	6	3
Machinists	**Median Scores**	**5**	**4**	**3**	**4**	**4**	**4**	**4**	**2**
	Range	3-7	3-6	2-5	3-6	3-6	3-6	3-6	1-4
51-4041.00 R N	Number of Jobs	140	86	43	131	84	128	67	48

The similarities in WorkKeys scores, combined with the emerging state of this occupational field, give us reason to believe that this occupational hybrid is a very realistic outcome of a concerted SSI effort in collaboration with community partners.

A hybrid occupation would demand the best of a cross section of skills, as indicated from this composite O*Net skill profile drawing from the strengths of each of the five aforementioned SOC codes (on a 1-100 scale, with 100 being highest):

Score	Skill	Description
85	Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
85	Operation and Control	Controlling operations of equipment or systems.
82	Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
78	Mathematics	Using mathematics to solve problems.
76	Repairing	Repairing machines or systems using the needed tools.
75	Troubleshooting	Determining causes of operating errors and deciding what to do about it.
70	Equipment Selection	Determining the kind of tools and equipment needed to do a job.
70	Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
65	Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
65	Reading Comprehension	Understanding written sentences and paragraphs in work related documents.
60	Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
60	Coordination	Adjusting actions in relation to others' actions.
60	Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
60	Installation	Installing equipment, machines, wiring, or programs to meet specifications.
60	Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
59	Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
55	Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
50	Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
50	Speaking	Talking to others to convey information effectively.
50	Time Management	Managing ones own time and the time of others.
45	Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
45	Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
40	Operations Analysis	Analyzing needs and product requirements to create a design.
35	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
35	Technology Design	Generating or adapting equipment and technology to serve user needs.
35	Writing	Communicating effectively in writing as appropriate for the needs of the audience.
32	Service Orientation	Actively looking for ways to help people.
30	Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
30	Negotiation	Bringing others together and trying to reconcile differences.
30	Persuasion	Persuading others to change their minds or behavior.
30	Science	Using scientific rules and methods to solve problems.
25	Instructing	Teaching others how to do something.
25	Programming	Writing computer programs for various purposes.
15	Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.

10	Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.

Survey respondents noted a lack of applicants with the raw capacities to program, manage and maintain their production equipment. An appropriate starting point would be to begin working with existing providers to ascertain training capacity while developing root-cause rationales for this shortage.

Industry trends, as gathered from the surveys conducted over the information-gathering phase of this project, already suggest that an informal level of hybrid skill development is taking place on the shop floor. It is our hope that we can formalize these multiple skill sets to ensure a stronger manufacturing workforce.

An overview of area education and training providers reveals ample training capacity for a hybrid CNC-MIMM position, but alignment of resources may be a challenge. The CNC-MIMM position generally takes the equivalent of an associate's degree (two years or specific coursework and lab training) along with two-to-four years of on-the-job training. The program at Ivy Tech Northeast has programming courses, but not necessarily state-of-the-art equipment. A customized CNC-MIMM training program on "state-of-the-art" Swiss equipment is available in Noble County, but no programming is available. Due to this imperfect set of training materials, the supply of CNC-MIMM positions is heavily dependent on the two-to-four year window of job training. A graduate today may not have an impact right away, and for any new programs (e.g. Freedom Academy), the supply is not a factor until at least 2007.

7.2.4. Skill gaps

Advanced manufacturers are dependent on CNC equipment managers. This was the consistent skill demand mentioned by LEDOs (eight of nine LEDO-questionnaire respondents identified CNC skills as a shortage area, per Section 10.4.3.). Experts within advanced manufacturing largely agreed. While individual manufacturers are integrating their equipment and maintenance skills in different ways, nearly every one interviewed offered comments reflecting the change in approach to self-directed work-space managers.

One industry expert, whose company is moving into the CNC-manufacturing model, suggested that the critical skills needed by these employees are basic metal machining knowledge, math skills, mechanical aptitude skills, ability to read blueprints, and the ability to set up machines to the exact tolerances required on a blueprint. Computer skills are becoming increasingly important for this company as new pieces of equipment purchased have computer features built in. He indicated that these critical skills are extremely difficult to replace via technology, outsourcing, offshoring, etc. Without these skills on his staff, this growing employer cannot be certain that it would stay in business.

Another industry expert indicated that his emerging needs were both skilled maintenance technical staff and CNC operators. He was looking for experienced troubleshooters for a wide variety of CNC equipment, giving credence to the need to have a broad set of interchangable skills. CNC equipment is the lifeblood of this successful manufacturer, and without the skills to operate and maintain this equipment, this expert sees his business struggling.

A third industry expert, who is moving his young company closer toward orthopedics products manufacturing, requires CNC programming, blueprint reading and fixture building via multiaxis programming. He believes he will survive without adding these skills as his company grows, but not having these skills in house will likely stunt his company's growth.

7.3. Target occupation: Industrial Engineers

7.3.1. Occupation description

While the egr3projections.xls spreadsheet in the SSI data packet tells us that our region is expected to demand 1,000 new engineers across our various industries between 2002 and 2012, the industrial engineer is especially critical for the advanced-manufacturing industry because, by definition, this occupation is weighted toward the applied nature of its science. A regular comment from regional manufacturers during the industry interview phase was that their engineers are largely flush with academic skills but lack the applied experience that allows them to take their knowledge from the classroom confidently into the workplace.

As described in Section 7.1., industrial engineers provide the engineering, design and advanced-equipment programming in the new manufacturing model. Their role should be symbiotic with the aforementioned CNC-based work-space manager.

The BLS describes the industrial engineer as follows:

> "Industrial engineers determine the most effective ways to use the basic factors of production—people, machines, materials, information, and energy—to make a product or to provide a service. They are the bridge between management goals and operational performance. They are more concerned with increasing productivity through the management of people, methods of business organization, and technology than are engineers in other specialties, who generally work more with products or processes."[45]

O*Net's description and general WorkKeys profile of this occupation:

[45] Industrial Engineers, including Health and Safety. U.S. BLS. Accessed 28 Oct. 2005 <http://www.bls.gov/oco/ocos032.htm>.

- **Industrial Engineer (SOC 17-2112)** - Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.
    - *Sample of reported job titles: Industrial Engineer, Manufacturing Engineer, Process Engineer, Operations Engineer, Manufacturing Specialist, Tool Engineer, Production Engineer*
    - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $19.38, and the median wage is $26.12.

While this occupation can be sensitive to industry economic pressures, the industrial engineer – with its eye toward process and quality improvements – can be used as a tool to proactively address those issues. Indeed, many of EGR-3's most innovative manufacturers are utilizing the combination of technical, innovative and communication skills that industrial engineers possess.

By 2012, EGR-3 is projected to employ more industrial engineers than electrical engineers or mechanical engineers – 1,300; 880; and 1,150, respectively[46]. With as many employers utilizing industrial engineers this position is a growth field. Clearly a partnership-driven education and training model could fill the main skill gap.

7.3.2. Demonstration of demand

According to the BLS the "nature of work" for an industrial engineer is:

"Industrial engineers determine the most effective ways to use the basic factors of production—people, machines, materials, information, and energy—to make a product or to provide a service. They are the bridge between management goals and operational performance. They are more concerned with increasing productivity through the management of people, methods of business organization, and technology than are engineers in other specialties, who generally work more with products or processes. Although most industrial engineers work in manufacturing industries, they may also work in consulting services, healthcare, and communications.

To solve organizational, production, and related problems most efficiently, industrial engineers carefully study the product and its requirements, use mathematical methods such as operations research to meet those requirements, and design manufacturing and information systems. They develop management control systems to aid in financial planning and cost analysis and design production planning and control systems to coordinate activities and ensure product quality. They also design or improve systems for the physical distribution of goods and services. Industrial engineers determine which plant location has the best combination of raw materials availability, transportation

[46] egr3projections.xls. Strategic Skills Initiative data packet. Lines 89, 93 and 95.

facilities, and costs. Industrial engineers use computers for simulations to control various activities and devices, such as assembly lines and robots. They also develop wage and salary administration systems and job evaluation programs. Many industrial engineers move into management positions because the work is closely related."[47]

According to the 2000-2010 job projections provided on IWD's Labor Market Information (LMI) Web site, there were 840 industrial engineers in the nine-county WIB Region 3. Projections for 2010 indicate that this total would drop to 780 for the WIB Region. However, the 2002 -2012 job projections provided on the SSI Web site indicate that there were 1,220 industrial engineers in the 11-county EGR-3. Unlike the LMI projections, the SSI projections indicate a modest growth in the number of industrial engineers in EGR-3 by 2012 to a total of 1,300.

The 2002 -2012 projections' series has indicated that there will be a need for 300 replacement industrial engineers in EGR-3 over that 10-year period. The 2000-2010 projection series indicated the need for only 100 replacement industrial engineers over that respective time period (and only for the smaller nine-county WIB Region 3).

State and National Trends: Industrial Engineers

United States	**Employment**		**Percent Change**	**Job Openings**[48]
	2002	**2012**		
Industrial Engineers	158,300	175,100	+ 11 %	5,520
Indiana	**Employment**		**Percent Change**	**Job Openings**
	2002	**2012**		
Industrial Engineers	5,360	5,940	+ 11 %	190

Based upon information obtained from the SSI Occupation and Industry Estimates the 960 industrial engineers employed in EGR-3 in 2003 were predominately found in the following three-digit NAICS-industry categories within the Manufacturing sector:

[47] U.S. Department of Labor, BLS; Occupational Outlook Handbook.
[48] Job Openings refers to the average annual job openings due to growth and net replacement. For more information on this topic, go to: http://www.acinet.org/acinet/faq_info.asp?question=128&goto=/acinet/occ_rep.asp%3FOp2%3Dyes%26Op3%3Dyes%26showintro%3Dno%26soccode%3D172112%26stfips%3D18%26search%3DGo

Plastics and Rubber Products Manufacturing	70
Primary Metal Manufacturing	40
Fabricated Metal Product Manufacturing	60
Machinery Manufacturing	70
Computer and Electronic Product Manufacturing	110
Electrical Equipment, Appliance, and Component Manufacturing	30
Transportation Equipment Manufacturing	360
Miscellaneous Manufacturing	10

Information gleaned from the 2002-2012 Occupation and Industry Employment Projections provided slightly different information on the total current employment of industrial engineers in EGR-3. However, there was similarity in regard to the manufacturing industries in which these industrial engineers were employed:

Industrial Engineers	2003 Publishable mean annual wage	2002 Base Year Employment	2012 Projected Employment
All Industries	$43,945	1220	1300
Plastics and Rubber Products Manufacturing	$48,483	100	140
Primary Metal Manufacturing	$50,779	50	50
Fabricated Metal Product Manufacturing	$46,884	90	100
Machinery Manufacturing	$49,759	70	80
Computer and Electronic Product Manufacturing	$58,769	280	190
Electrical Equipment, Appliance, and Component Manufacturing	$57,986	20	20
Transportation Equipment Manufacturing	$56,107	340	400
Miscellaneous Manufacturing	$47,625	30	30
Professional, Scientific, and Technical Services	$63,426	120	130

Not surprisingly, manufacturing industries accounted for just fewer than 85 percent of employment opportunities for industrial engineers in both 2002 and for the 2012 projections.

Current average annual wages for industrial engineers were substantially higher than the mean average annual wage for all jobs in EGR-3 in 2003, $43,945 compared with $31,875. The average annual “entry” level wage for industrial engineers was $40,305 compared with that for all EGR-3 “entry” occupations at $16,461. The average annual wage for “experienced” industrial engineers was $61,346 compared with that for all EGR-3 “experienced” employees at $39,582.

State and National Wages: Industrial Engineer (from America's Career InfoNet)

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	$19.98	$24.74	$30.79	$37.65	$44.41
	Yearly	$41,600	$51,500	$64,000	$78,300	$92,400
Indiana	Hourly	$19.19	$23.40	$28.40	$34.96	$41.74
	Yearly	$39,900	$48,700	$59,100	$72,700	$86,800

Education and Training

Occupation: Industrial Engineers
Most Common Educational/Training Level: Bachelor's degree
Related Instructional Programs: Industrial Engineering

Distribution of Educational Attainment

Occupation	Percent of employees aged 25 to 44 in the occupation whose highest level of educational attainment is-		
	High School or Less	Some College	Bachelor Degree or More
Industrial Engineers	5.1%	26.5%	68.3%
Engineers	5.4%	16.2%	78.3%
Architecture and Engineering	12.9%	29.2%	57.9%
Total, All Occupations	42.4%	27.8%	29.8%

As can be seen by the "Distribution of Educational Attainment," more than three-fourths of the current practicing engineers in Indiana have at least a bachelor's degree. This is clearly going to be the minimum entry-level educational requirement for those that will be entering this field in the future. Therefore, in many respects the education of industrial engineers is provided by a university system that extends well beyond the geographic boundaries of the 11-county EGR-3. Indiana universities and colleges conferred 1,996 bachelor's degrees in all engineering disciplines between July 2003 and June 2004. They conferred another 656 master's degrees in engineering disciplines and 169 doctoral degrees in engineering fields over the same time period.

Certainly engineering is a very broad field and not all of those engineering graduates possess the proper educational training to meet the demands for industrial and systems engineers mentioned so frequently in the interviews with EGR-3 industrial- and technology-oriented companies. Purdue University in West Lafayette, however, offers a specific degree in industrial engineering and conferred 159 undergraduate and 78

master's and doctoral degrees in this discipline. The production rate for industrial engineers at Purdue alone is approximately equal to the projected annual demand for industrial engineers in the entire state (based upon the America's Career InfoNet, and IDWD 2002-2012 growth and replacement projections).

Questions arising from this analysis indicate that during the Root Causes' section of the report we should be concentrating on the ability of EGR-3 to attract the newly-graduated engineers being provided in general by the 11 Indiana universities educating engineers. More specifically, we should be concentrating on both our ability to attract those industrial engineering graduates from Purdue University, West Lafayette, and in determining the level at which our recent college graduates in all engineering disciplines possess the "systems'" approach to engineering skills so frequently mentioned during the industry interviews.

7.3.3. Skills

ACT's WorkKeys sample skill assessment scores for an industrial engineer (available at www.workkeys.com) are:

Title/O*NET Number/Career Cluster/Career Area		Applied Math	Applied Technology	Listening	Locating Information	Observation	Reading for Information	Teamwork	Writing
Industrial Engineers	**Median Scores**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
	Range	3-6	3-5	2-4	3-6	3-5	3-5	3-6	3-4
17-2112.00 I O	Number of Jobs	17	9	11	19	13	18	13	11

The Institute of Industrial Engineers states that industrial engineers possess the following skills, some of which are outside the standard bounds of technical training:[49]

- Good math skills
- Strong time management skills
- Mechanical aptitude
- Good common sense
- A strong desire for organization and efficiency
- Excellent communication/salesmanship
- Creative problem solving
- Quantitative skills
- Technical competency
- Continuous drive for improvement
- Resourcefulness
- Listening skills
- Negotiation skills

[49] Skills and Qualities Needed. Institute of Industrial Engineers. Accessed 28 Oct. 2005 <http://www.iienet.org/public/articles/index.cfm?cat=829>.

- Diplomacy
- Patience
- Ability to adapt to many environments, wear many hats, and interact with a diverse group of individuals
- An inquisitive mind
- Continuous desire to learn
- Leadership skills
- Ethics
- Passion for improvement

Another important skill for the industrial engineer is the ability to think in systems rather than separated units. The ability to perform global thinking is an art, and we see this critical skill as the strategic equivalent of the CNC-MIMM performing tactical multi-tasking within their work area.

The skills listed above are trained through formal industrial-engineering degree programs, which are available in EGR-3 through Indiana University-Purdue University at Fort Wayne and Indiana Institute of Technology.

Most of the manufacturers interviewed discussed the need to blend formal education with hands-on application to learn the real-life processes of manufacturing. One specific EGR-3 manufacturer interview clearly explains his company's applied skill requirements. The interviewer's notes state,

> "Skills required beyond those taught in school would include troubleshooting skills. This is imperative because it includes the practical application of not only technical skills, but applying common sense and 'thinking outside the box' to try applications that may not be typical. Quality engineers will need to be able to take a print, work toward the effective application of that process through testing, making adjustments, continuously monitoring, evaluating, etc. People/soft skills are becoming more important as well. Being a leader versus 'an engineering nerd' concept. Contributing as a member of the team versus being an individual contributor. More design skills will be required."

7.3.4. Skill gaps

As statistics and our primary research indicate, industrial engineers are increasingly sought for their unique blend of academic skills and real-life know how. According to the Institute of Industrial Engineers, an industrial engineer will design and implement "processes and systems that improve quality and productivity."[50]

[50] About Industrial Engineering. The Institute of Industrial Engineers. Accessed 28 Oct. 2005 <http://www.iienet.org/public/articles/index.cfm?cat=840>.

As visible as the CNC operators/maintenance skill gap was for LEDOs, manufacturers added their voice on the need for qualified, degreed engineers. Six of 11 manufacturers specifically named engineers as a critical or emerging need for their businesses, with one manufacturer volunteering that the local shortage of engineers is forcing it to bring foreign engineers from its overseas divisions to Northeast Indiana to fill the gaps. From quality engineers to advanced CAD design/programming, the need for engineering degree holders is strong across EGR-3.

Another interviewee stated the significance of the engineering skill gap most clearly in saying, “There are no qualified people in the job market to do the work I need.”

Interview analysis indicates that of the respondents who considered these engineers as a critical occupation, 20 percent indicated that it would be “very difficult” to manage without them through outsourcing, offshoring, technology, etc. The remainder said it would be “difficult.” Of those who considered this as an emerging field for their businesses, one-third said they probably would go out of business or relocate to where they could find talent; one-third said that their businesses would struggle to stay competitive; one-sixth indicated that they would manage; and the remainder said they would appreciate the additional skills but would survive.

8. Target Region: Economic Growth Region 3

8.1. Overview

A new warehouse is being built with the latest supply-chain management systems.

An independent long-term care center wants to "go wireless," giving its staff immediate access to digital patient records.

A business-systems analyst wants to stop hiring temporary help from Texas and replace them with local talent.

A defense contractor wants employees who can integrate existing systems in innovative ways into a customized product for its clients.

A community-hospital director sees the future of quality patient care intertwined with how his institution utilizes computer software and hardware.

Every one of those industry interviewees doesn't know where they will find the people to perform the work that needs to be done.

Northeast Indiana has entered the information age. And there is a very real and basic question: How prepared is our workforce for it?

As our global secondary research so clearly indicates, we now live in a knowledge-based economy. Dr. Curtain's report for Manpower reminds us that the last 30-plus years have seen a steady trend in the increase of jobs requiring expert thinking and complex communications skills. Routine-task jobs, be they skilled or nonskilled, continue their steady decline across the country.[51] These developments demand an expert workforce – one that can manage technology in a flat world.

The National Intelligence Council lays the challenge out to us:

> *"The greatest benefits of globalization will accrue to countries and groups that can access and adopt new technologies*. Indeed, a nation's level of technological achievement generally will be defined in terms of its investment in *integrating and applying* the new, globally-available technologies—whether the technologies are acquired through a country's own basic research or from technology leaders."[52]

As Section 1 alluded, Northeast Indiana historically enjoyed a place in the forefront of technology advances. Primary research for the Northeast Indiana SSI project, however,

[51] Curtain, p. 8.
[52] "Mapping the Global Future – 2020." National Intelligence Council, 11 Jan. 2005, p. 11.

reveals a different world today. We detect industry leaders who know they should embrace technology but haven't. We detect a reluctant acceptance that we must engage in the information age.

In the midst of this confusion about the role of technology in our lives, some Northeast Indiana leaders are proactively engaging in the newly-flattened world through the integration and application of technologies, as the NIC suggests. Their challenge is finding a sufficient workforce to perform the work of the post-industrial economy.

SSI presents a unique opportunity to bring our community together to face a common challenge with a shared sense of purpose. Section 2 outlines a region in transition We know what we no longer are, but we are still struggling to find a new identity.

Northeast Indiana should look further northeast, to Detroit, for inspiration as it reinvents itself. Southeast Michigan, even more than Northeast Indiana, is dependent on the domestic automotive industry. With EGR-3's industry mix so auto parts-oriented, it could be argued that Northeast Indiana is an economic suburb of Detroit. As the saying goes: When Detroit gets a cold, Northeast Indiana comes down with the flu.

In early October, Automation Alley, a Southeast Michigan technology advocacy group, released its first technology report for its eight-county region, "Driving Southeast Michigan Forward." In it, the group laid out a reality similar to Northeast Indiana. It acknowledged that the area is subject to the severe highs and lows of the auto industry. Automation Alley also took a critical look at Southeast Michigan and determined that it has the tools to diversify if it wishes. Again, the same arguments ring true for Northeast Indiana.

Perhaps Automation Alley's most compelling argument was how Southeast Michigan viewed technology, and how that perception may not be correct. In the key findings, the group states:

> **"Technology isn't a product, it's a manner of producing.** Much of the confusion about "technology" arises from a fundamental misconception that gained currency in the decades during which personal computers arrived on nearly every desktop and workbench. "Technology" is not a product that can be assembled and sold; technology is a manner of producing products or providing services.
>
> "Many companies in Automation Alley use extremely sophisticated processes to make the products and deliver the services they offer in the world market. It is these processes that are the "technology" of production. When we define the technology industry, we look at the manner of producing the goods and services to see how technology is employed. Intensive use of advanced production

> processes and a reliance on knowledge workers defines the technology industry."[53]

These words ring true for EGR-3. In embracing technology in the spirit outlined above, we want to use SSI to meet a key skill gap and, in the process, demonstrate that we will capitalize on our core skills and talents to meet the challenge of this Brave New World.

8.2. Target Occupation: Computer Systems Analyst

Our challenge in finding the proper occupation for this scenario was that we did not enter into the SSI project thinking that we were going to develop innovative solutions to shortages in technology occupations. But the need is clear, and we will respond to demand.

We believe that the occupation of computer systems analyst represents an ideal starting point. As the occupational description will show, the different skills of this occupation allow for nearly all of the EGR-3 demand scenarios in Section 8.1. to be filled.

The computer systems analyst also appears to be a strong entry point for our transitional workforce. Incumbent workers looking to expand their skills would do well by learning the skills this occupation offers. This occupation also appears to have a strong career ladder.

In most relevant interview responses, this well-defined occupation was treated in the SSI definition of "emerging occupation":

> "When we talk about 'emerging' occupations in the context of SSI, we mean newer occupations that *have not yet been classified* according to the official BLS system of SOC codes."[54]

Clearly, the computer systems analyst occupation has been classified through Standard Occupational Code methodology. The fact that so many interviewed employers recognized this need and did not have plans in place to implement solutions indicates that, for a large cross section of EGR-3, the computer systems analyst is indeed an emerging occupation.

Lastly, there is a strong economic-development potential to this occupation, offering growth possibilities not indicated in our data packets. Our LEDO conversations revealed a strong desire to engage in information technology…if they had the

[53] "Automation Alley's First Annual Technology Report: Driving Southeast Michigan Forward." Automation Alley, 6 Oct. 2005, p. ii.
[54] Judy, Richard W. and Brian G. Hartz. "The Strategic Skills Initiative Research and Identification Guidebook Version 1.0." Indiana Workforce Development, 2 Sept. 2005, p. 55.

workforce. Anecdotal evidence indicates that Northeast Indiana could benefit quickly from building a computer systems analyst workforce.

8.3. EGR-3 Demographics

The following 7 industries, per egr3projections.xls, appear to be the major beneficiaries of an increase in the number of computer systems analysts:

Computer and Electronic Product Manufacturing (NAICS #334)	Miscellaneous Manufacturing (NAICS #339)	Electrical Equipment, Appliance, and Component Manufacturing (NAICS #335)
• 4th Q 2004 Average Weekly Wage = $1,048.81 • 1st Q 2001 Average Weekly Wage = $875.17 • 2004 Average Annual Wage = $52,635 • 1994 Average Annual Wage = $31,450 • 4th Q 2004 Total Employment = 6,815 • 1st Q 2001 Total Employment = 10,497 • 2004 Average Annual Employment = 7,159 • 1994 Average Annual Employment = 13,603 • Occupational Base Year Employment (2002) = 9,190 • Projected Employment in 2012 = 6,010 • 4th Q 2004 Number of Establishments = 41 • 1st Q 2001 Number of Establishments = 47 • 2004 Number of Establishments = 44 • 1994 Number of Establishments = 54 • Info USA lists 32 establishments • 4th Q 2004 LQ = 1.98 • 1st Q 2001 LQ = 2.10 • 1994 Location Quotient = 2.76 • 1994- 2004 Employment Change = -6,444 • 1st Q 2001 to 4th Q 2004 job change = -3,682 • 2001-2004 Shift-Share Regional Jobs Shift = -622 • 2001-2004 Shift-Share Industry Jobs Mix = -3,257 • 1994-2004 Shift-Share Regional Jobs Mix = -3,748	• 4th Q 2004 Average Weekly Wage = $759.05 • 1st Q 2001 Average Weekly Wage = $618.50 • 2004 Average Annual Wage = $36,100 • 1994 Average Annual Wage = $23,921 • 4th Q 2004 Total Employment = 3,294 • 1st Q 2001 Total Employment = 3,316 • 2004 Average Annual Employment = 3,244 • 1994 Average Annual Employment = 4,456 • Occupational Base Year Employment (2002) = 3,070 • Projected Employment in 2012 = 3,010 • 4th Q 2004 Number of Establishments = 79 • 1st Q 2001 Number of Establishments = 73 • 2004 Number of Establishments = 85 • 1994 Number of Establishments = 85 • Info USA lists 173 establishments • 4th Q 2004 LQ = 1.91 • 1st Q 2001 LQ = 1.70 • 1994 Location Quotient = 2.07 • 1994- 2004 Employment Change = -1,212 • 1st Q 2001 to 4th Q 2004 job change = -22 • 2001-2004 Shift-Share Regional Jobs Shift = +291 • 2001-2004 Shift-Share Industry Jobs Mix = -376 • 1994-2004 Shift-Share Regional Jobs Mix = -828	• 4th Q 2004 Average Weekly Wage = $1,028.87 • 1st Q 2001 Average Weekly Wage = $789.21 • 2004 Average Annual Wage = $50,783 • 1994 Average Annual Wage = $30,688 • 4th Q 2004 Total Employment = 3,015 • 1st Q 2001 Total Employment = 4,605 • 2004 Average Annual Employment = 3,208 • 1994 Average Annual Employment = 5,719 • Occupational Base Year Employment (2002) = 3,870 • Projected Employment in 2012 = 3,470 • 4th Q 2004 Number of Establishments = 38 • 1st Q 2001 Number of Establishments = 41 • 2004 Number of Establishments = 40 • 1994 Number of Establishments = 63 • Info USA lists 30 establishments • 4th Q 2004 LQ = 3.40 • 1st Q 2001 LQ = 2.94 • 1994 Location Quotient = .28 • 1994- 2004 Employment Change = -2,511 • 1st Q 2001 to 4th Q 2004 job change = -1,590 • 2001-2004 Shift-Share Regional Jobs Shift = -496 • 2001-2004 Shift-Share Industry Jobs Mix = -1,181 • 1994-2004 Shift-Share Regional

• 1994-2004 Shift-Share Industry Jobs Mix = -4,726	• 1994-2004 Shift-Share Industry Jobs Mix = -1,048	Jobs Mix = -1,165 • 1994-2004 Shift-Share Industry Jobs Mix = -2,199

Insurance Carriers and Related Activities (NAICS #524)

- 4th Q 2004 Average Weekly Wage = $1,041.80
- 1st Q 2001 Average Weekly Wage = $1,068.05
- 2004 Average Annual Wage = $53,118
- 1994 Average Annual Wage = $36,799
- 4th Q 2004 Total Employment = 5,544
- 1st Q 2001 Total Employment = 7,859
- 2004 Average Annual Employment = 5,700
- 1994 Average Annual Employment = 6,943
- Occupational Base Year Employment (2002) = 6,780
- Projected Employment in 2012 = 5,720
- 4th Q 2004 Number of Establishments = 450
- 1st Q 2001 Number of Establishments = 445
- 2004 Number of Establishments = 485
- 1994 Number of Establishments = 474
- Info USA lists 586 establishments
- 4th Q 2004 LQ = 0.99
- 1st Q 2001 LQ = 1.39
- 1994 Location Quotient = 1.18
- 1994- 2004 Employment Change = -1,243
- 1st Q 2001 to 4th Q 2004 job change = -2,315
- 2001-2004 Shift-Share Regional Jobs Shift = -2,456
- 2001-2004 Shift-Share Industry Jobs Mix = -7
- 1994-2004 Shift-Share Regional Jobs Mix = -1,895
- 1994-2004 Shift-Share Industry Jobs Mix = -384

Professional, Scientific, and Technical Services (NAICS #541)

- 4th Q 2004 Average Weekly Wage = $883.14
- 1st Q 2001 Average Weekly Wage = $733.70
- 2004 Average Annual Wage = $41,378
- 1994 Average Annual Wage = $31,590
- 4th Q 2004 Total Employment = 8,213
- 1st Q 2001 Total Employment =8,889
- 2004 Average Annual Employment = 8,222
- 1994 Average Annual Employment = 7,319
- Occupational Base Year Employment (2002) = 8,290
- Projected Employment in 2012 = 9,200
- 4th Q 2004 Number of Establishments = 1,222
- 1st Q 2001 Number of Establishments = 1,064
- 2004 Number of Establishments = 1,331
- 1994 Number of Establishments = 1,033
- Info USA lists 1,686 establishments
- 4th Q 2004 LQ = 0.45
- 1st Q 2001 LQ = 0.47
- 1994 Location Quotient = 0.46
- 1994- 2004 Employment Change = +903
- 1st Q 2001 to 4th Q 2004 job change = -676
- 2001-2004 Shift-Share Regional Jobs Shift = -564
- 2001-2004 Shift-Share Industry Jobs Mix = -279
- 1994-2004 Shift-Share Regional Jobs Mix = -1,389
- 1994-2004 Shift-Share Industry Jobs Mix = +1,200

Hospitals (NAICS #622)

- 4th Q 2004 Average Weekly Wage = $740.93
- 1st Q 2001 Average Weekly Wage = $639.96
- 2004 Average Annual Wage = $36,895
- 1994 Average Annual Wage = $25,281
- 4th Q 2004 Total Employment = 15,720
- 1st Q 2001 Total Employment = 14,385
- 2004 Average Annual Employment = 15,693
- 1994 Average Annual Employment = 14,625
- Occupational Base Year Employment (2002) = 14,040
- Projected Employment in 2012 = 15,190
- 4th Q 2004 Number of Establishments = 22
- 1st Q 2001 Number of Establishments = 23
- 2004 Number of Establishments = 22
- 1994 Number of Establishments = 26
- Info USA lists 70 establishments
- 4th Q 2004 LQ = 1.09
- 1st Q 2001 LQ = 1.04
- 1994 Location Quotient = 1.00

Merchant Wholesalers, Durable Goods (NAICS #423)

- 4th Q 2004 Average Weekly Wage = $1,005.74
- 1st Q 2001 Average Weekly Wage = $736.88
- 2004 Average Annual Wage = $43,823
- 1994 Average Annual Wage = $29,324
- 4th Q 2004 Total Employment = 8,288
- 1st Q 2001 Total Employment = 8,390
- 2004 Average Annual Employment = 8,193
- 1994 Average Annual Employment = 6,815
- Occupational Base Year Employment (2002) = 8,040
- Projected Employment in 2012 = 8,230
- 4th Q 2004 Number of Establishments = 623
- 1st Q 2001 Number of Establishments = 576
- 2004 Number of Establishments = 656
- 1994 Number of Establishments = 575
- Info USA lists 904 establishments
- 4th Q 2004 LQ = 1.07
- 1st Q 2001 LQ = 0.99

• 1994- 2004 Employment Change = +1,068 • 1st Q 2001 to 4th Q 2004 job change = +1,335 • 2001-2004 Shift-Share Regional Jobs Shift = +248 • 2001-2004 Shift-Share Industry Jobs Mix = +816 • 1994-2004 Shift-Share Regional Jobs Mix = -761 • 1994-2004 Shift-Share Industry Jobs Mix = -353	• 1994 Location Quotient = 0.89 • 1994- 2004 Employment Change = 1,378 • 1st Q 2001 to 4th Q 2004 job change = -102 • 2001-2004 Shift-Share Regional Jobs Shift = +369 • 2001-2004 Shift-Share Industry Jobs Mix = -629 • 1994-2004 Shift-Share Regional Jobs Mix = +353 • 1994-2004 Shift-Share Industry Jobs Mix = +8

8.4. Occupational description

The BLS describes the computer systems analyst occupation as follows:

> *"Systems analysts* solve computer problems and apply computer technology to meet the individual needs of an organization. They help an organization to realize the maximum benefit from its investment in equipment, personnel, and business processes. Systems analysts may plan and develop new computer systems or devise ways to apply existing systems' resources to additional operations. They may design new systems, including both hardware and software, or add a new software application to harness more of the computer's power. Most systems analysts work with specific types of systems—for example, business, accounting, or financial systems, or scientific and engineering systems—that vary with the kind of organization. Some systems analysts also are known as *systems developers* or *systems architects*."[55]

O*Net's description of our target occupation:

- **Computer Systems Analyst (SOC 15-1051):** Analyze science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially-available software. May supervise computer programmers.
  - *Sample of reported job titles: Systems Analyst, Programmer Analyst, Computer Systems Consultant, Business Systems Analyst, Systems Engineer, Program Manager, Information Technology Specialist, Information Technology Consultant, Data Processing Systems Analyst, Computer Systems Analyst*
  - The egr3estimates.xls spreadsheet in the SSI data packet indicates that entry level hourly wages for this SOC are $22.13, and the median wage is $28.73.

[55] Computer Systems Analysts, Database Administrators, and Computer Scientists. U.S. BLS. Accessed 29 Oct. 2005 <http://www.bls.gov/oco/ocos042.htm>.

Like all computer service professions, this occupation is somewhat sensitive to offshore competition, currently from India. However, this occupation is much less sensitive to than those resembling "call center-style" support occupations because the systems analyst occupation requires direct interpersonal interaction to solve the client/employer's information-systems problems. While these tasks can be accomplished via an overseas telephone connection, but it is not as easily done. This occupation can also be sensitive to pressures from outsourcing should the employer wish to engage systems analyst consultants.

Computer analyst training can range from a two-year degree to a graduate degree. This is a high-growth field due to the rapid implementation of technology in virtually every industry. That rapid implementation requires this occupation to continually stay abreast of industry development and often retrain itself to reflect industry evolutions, internalizing the concept of lifelong learning.[56]

Advancement in this industry is largely self-directed. Key skills (such as to be a Microsoft Certified Systems Engineer, or MCSE) are documented through certifications and formal training. Because of the unstructured nature of the work, ones worth and responsibility is derived from his/her knowledge and utility to the employer. If the computer systems analyst works in groups or teams, he/she can work toward a leadership or management-based promotion within the organization.

Computer systems analysts can be looked upon as a gateway occupation to other like-minded occupations; the BLS lists possible related occupations as computer programmers, computer software engineers, computer and information systems managers, financial analysts and personal financial advisors, urban and regional planners, engineers, mathematicians, statisticians, operations research analysts, management analysts, and actuaries.[57]

8.5. Demonstration of demand

The occupational description for a computer systems analyst obtained from America's Career InfoNet:

"Analyze science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially-available software. The occupation may supervise computer programmers."

[56] Ibid.
[57] Computer Systems Analysts, Database Administrators, and Computer Scientists. U.S. BLS. Accessed 29 Oct. 2005 <http://www.bls.gov/oco/ocos042.htm>.

According to the BLS, the "nature of work" for a computer systems analyst is:

"The rapid spread of computers and information technology has generated a need for highly-trained workers to design and develop new hardware and software systems and to incorporate new technologies. These workers—computer systems analysts, database administrators, and computer scientists—include a wide range of computer specialists. Job tasks and occupational titles used to describe these workers evolve rapidly, reflecting new areas of specialization or changes in technology, as well as the preferences and practices of employers.

Systems analysts solve computer problems and apply computer technology to meet the individual needs of an organization. They help an organization to realize the maximum benefit from its investment in equipment, personnel, and business processes. Systems analysts may plan and develop new computer systems or devise ways to apply existing systems' resources to additional operations. They may design new systems, including both hardware and software, or add a new software application to harness more of the computer's power. Most systems analysts work with specific types of systems—for example, business, accounting, or financial systems, or scientific and engineering systems—that vary with the kind of organization. Some systems analysts also are known as *systems developers* or *systems architects*.

Systems analysts begin an assignment by discussing the systems problem with managers and users to determine its exact nature. Defining the goals of the system and dividing the solutions into individual steps and separate procedures, systems analysts use techniques such as structured analysis, data modeling, information engineering, mathematical model building, sampling, and cost accounting to plan the system. They specify the inputs to be accessed by the system, design the processing steps, and format the output to meet users' needs. They also may prepare cost-benefit and return-on-investment analyses to help management decide whether implementing the proposed technology will be financially feasible.

When a system is accepted, systems analysts determine what computer hardware and software will be needed to set the system up. They coordinate tests and observe the initial use of the system to ensure that it performs as planned. They prepare specifications, flow charts, and process diagrams for computer programmers to follow; then, they work with programmers to "debug," or eliminate, errors from the system. Systems analysts who do more in-depth testing of products may be referred to as *software quality assurance analysts*. In addition to running tests, these individuals diagnose problems, recommend solutions, and determine whether program requirements have been met." (source: U.S. Department of Labor, BLS; Occupational Outlook Handbook)

According to the 2000-2010 job projections provided on IWD's LMI Web site, there were 830 computer systems analysts in the nine-county WIB Region 3 in 2000. Projections for 2010 indicate that this total would increase to 1,090 for the WIB Region. Please

note that the old WIB Region 3 does not include Grant and Wabash counties, which are included in EGR-3. The 2002 -2012 job projections provided on the SSI Web site indicate that there were 920 computer systems analysts in the 11-county EGR-3 in 2002. Similar to the LMI projections, the SSI projections indicate a modest growth in the number of computer systems analysts in EGR-3 by 2012 to a total of 1,050.

The 2002-2012 projections' series has indicated that there will be a need for 100 replacement computer systems analysts in EGR-3 over that 10-year period. The 2000 - 2010 projection series also revealed the need for only 100 replacement computer systems analysts over that respective time period (and only for the smaller nine-county WIB Region 3). However, the 2000-2010 series projections indicated that the smaller WIB Region 3 would experience twice the growth in computer systems analysts jobs than did the 2002-2012 series due to total employment growth (260 to 130).

State and National Trends

United States	**Employment**		**Percent Change**	**Job Openings**
	2002	**2012**		
Computer systems analysts	468,300	652,700	+ 39 %	23,740
Indiana	**Employment**		**Percent Change**	**Job Openings**
	2002	**2012**		
Computer systems analysts	7,660	9,600	+ 25 %	280

Based on the IDWD 2002-2012 occupational projections, Indiana will annually have approximately 290 openings for computer systems analysts – matching up very nicely with the projections found at America's Career InfoNet. Perhaps of more interest is the distribution of the projected openings due to growth and replacement among the respective EGRs. Central Indiana, EGR-5, is projected to account for 35 percent of net new jobs in Indiana between 2002 and 2012 based on the IDWD projections. Yet for computer systems analysts, EGR-5 is projected to account for 63 percent of the net new jobs in that field. Given the significance we believe that this occupation is likely to play in the economic future of our region by substantially enhancing our information-management capacity in a wide variety of industries, this disparity is worthy of consideration.

Like many "new economy" or knowledge-based occupations, thick labor markets appear to have real importance when attempting to attract talent (see the Progressive Policy Institute's work in the New Economy Index reports they prepared earlier this decade). As of 2002, EGR-5 already had 55 percent of all computer systems analysts jobs in the state (compared with just more than 30 percent of all jobs). The continuing projected concentration of these jobs in Central Indiana may represent the suspected influence of a thick labor market for technology-oriented occupations in that EGR. In fact, for all jobs

in the 15-1000 SOC grouping (Computer Specialists) the IDWD 2002-2012 projections show an increase of only 140 jobs, or 3-percent growth, in the category over the 10-year period. For all of Indiana the 2002-2012 occupational projections for this same category as found on the America's Career InfoNet indicates a growth rate of 23 percent over the time period. Either the projections for EGR-3 are very conservative or the information from the later source is extremely aggressive for the entire state.

Currently, EGR-3 is only slightly under-represented in computer systems analysts jobs, based on the 2002 base-year employment and proportionally based on all occupations. However, the projection for 2012 indicates that EGR-3 is anticipated to garner only 7 percent of net new computer systems analyst jobs. **We simply must do better if we are going to succeed as region with a technology-oriented advanced manufacturing and distribution economy.**

Information gleaned from the 2002-2012 Occupation and Industry Employment Projections illustrate the wide diversity of industries in which computer systems analysts are employed in EGR-3.

Computer Systems Analysts	2003 Publishable mean annual wage	2002 Base Year Employment	2012 Projected Employment
All Industries	$ 59,753	920	1050
Plastics and Rubber Products Manufacturing	$ 50,793	20	30
Computer and Electronic Product Manufacturing	$ 66,197	90	80
Transportation Equipment Manufacturing	$ 56,811	n/a	n/a
Merchant Wholesalers, Durable Goods	n/a	250	340
Insurance Carriers and Related Activities	$ 60,413	180	160
Professional, Scientific, and Technical Services	$ 57,060	50	50
Educational Services	$ 55,851	30	50
Hospitals	n/a	90	110
Public Administration	$ 55,859	n/a	n/a

Unlike many occupational categories in EGR-3, the manufacturing sector does not dominate the employment opportunities for computer systems analysts. Just over 25 percent of all such jobs are currently found in NAICS code 423 (Durable Goods Merchant Wholesalers); another 20 percent in NAICS 524 (Insurance Carriers and Related Activities); 16 percent in Manufacturing; and 10 percent in Hospitals.

Current average annual wages for computer systems analysts was substantially higher than the mean average annual wage for all jobs in EGR-3 in 2003, $59,753 compared with $31,875. The average annual "entry" level wage for computer systems analysts was $46,036 compared with that for all EGR-3 "entry" occupations at $16,461. The average annual wage for "experienced" computer systems analysts was $66,612 compared with that for all EGR-3 "experienced" employees at $39,582.

State and National Wages: Computer Systems Analysts (from America's Career InfoNet)

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	$19.54	$24.57	$31.28	$39.06	$46.09
	Yearly	$40,600	$51,100	$65,100	$81,200	$95,900
Indiana	Hourly	$18.40	$21.67	$27.17	$33.53	$40.43
	Yearly	$38,300	$45,100	$56,500	$69,700	$84,100

Education and Training

Occupation: Computer Systems Analysts
Most Common Educational/Training Level: Bachelor's degree
Related Instructional Programs:

- Computer Systems Analysis/Analyst
- Computer and Information Sciences, General
- Information Technology
- Web/Multimedia Management and webmaster

Distribution of Educational Attainment

Occupation	Percent of employees aged 25 to 44 in the occupation whose highest level of educational attainment is-		
	High School or Less	Some College	Bachelor Degree or More
Computer Systems Analysts	10.4%	27.2%	62.4%
Computer Specialists	9.5%	27%	63.5%
Computer and Mathematical	8.7%	24.6%	66.8%
Total, All Occupations	42.4%	27.8%	29.8%

As can be seen by the "Distribution of Educational Attainment," approximately 60 percent of practicing computer systems analysts in Indiana have at least a bachelor's degree. This is likely to be the minimum entry-level educational requirement for those that will be entering the field in the future.

The BLS' Occupation Outlook Handbook notes:

"Rapidly changing technology requires an increasing level of skill and education on the part of employees. Companies look for professionals with an ever-broader background and range of skills, including not only technical knowledge, but also communication and other interpersonal skills. This shift from requiring workers to possess solely sound technical knowledge emphasizes workers who can handle various responsibilities.

While there is no universally accepted way to prepare for a job as a systems analyst, computer scientist, or database administrator, most employers place a premium on some formal college education. A bachelor's degree is a prerequisite for many jobs; however, some jobs may require only a 2-year degree. Relevant work experience also is very important. For more technically complex jobs, persons with graduate degrees are preferred.

For systems analyst, programmer-analyst, and database-administrator positions, many employers seek applicants who have a bachelor's degree in computer science, information science, or management information systems (MIS). MIS programs usually are part of the business school or college and differ considerably from computer science programs, emphasizing business and management-oriented course work and business computing courses. Employers are increasingly seeking individuals with a master's degree in business administration (MBA), with a concentration in information systems, as more firms move their business to the Internet. For some network systems and data communication analysts, such as webmasters, an associate's degree or certificate is sufficient; although more advanced positions might require a computer-related bachelor's degree. For computer and information scientists, a doctoral degree generally is required due to the highly technical nature of their work."

Colleges and universities in EGR-3 provide several associates, bachelors and masters degree programs related to the preparation of computer systems analysts. Related programs are also offered at major Indiana universities located outside of EGR-3 but from which we can and due draw graduates.

Computer Systems Analyst-related Educational Degrees

	2003-04 # of Degrees
Schools in EGR-3	
Associates Degrees	
Computer and Information Sciences, General	84
Data Processing	19
Information Technology	35
Computer Systems Networking and Telecommunications	1
Total	**139**
Bachelor's Degrees	
Computer and Information Sciences, General	69
Computer Science	20
Data Processing	10
Computer and Information Science Support Services	16
Management Information Systems, General	39
Total	**154**

Masters Degrees	
Data Processing	13
Total	**13**
Major Indiana Schools Beyond EGR-3	
(Ball State, IU, and Purdue)	
Bachelor's Degrees	
Computer and Information Sciences, General	219
Computer Science	
Data Processing	
Computer and Information Science Support Services	139
Management Information Systems, General	
Total	**358**
Masters Degrees	
Computer and Information Sciences, General	91
Computer and Information Science Support Services	62
Total	**153**

Based on the IDWD 2000-2010 occupational-replacement projections for WIB Region 3 (26 per year) and the 2002-2012 occupational growth projections for EGR-3 (10 per year), our region should have approximately 36 job openings per year for computer systems analysts. Given the need to more aggressively integrate advanced-information management into industries located within EGR-3, we are adjusting this number to 50 per year (based upon the premise that we can increase our demand for growth in computer systems analysts to a rate similar to that projected for EGR-5 – 26 percent). The projected rate of growth for this occupational nationally is 39 percent. Assuming that only 25 percent of those college graduates in EGR-3 schools obtain a bachelor's degree in one of the computer-science and information-management programs; and assuming that EGR-3 attracts its proportional share of Ball State University, Indiana University, and Purdue University graduates in related bachelor degree programs (again using the 25 percent factor and the fact that EGR-3 represents approximately 12 percent of Indiana employment); then EGR-3 should have reasonable access to approximately 50 newly-degreed computer systems analysts per year.[58] These numbers would also assume that there is not net leakage of college graduates out of either EGR-3 or out of Indiana. Given the past performance in college graduate retention by both the region and the state, this is a very unlikely assumption to make. Therefore, we are reducing the supply side for computer systems analysts by ten per year to account for our traditionally poor performance in graduate retention. Given that several of the industries in EGR-3 indicated during the survey work that computer

[58] Based upon the ratio of projected 2012 Computer Systems Analysts in Indiana compared with the projected number of all Computer Specialist positions that generally require a Bachelor's Degree at the entry level.

specialists and information managers were critical to their future success, we are suggesting that the annual net shortage of needed new professionals in computer systems analysts is approximately ten per year. If we are able to improve the technology and information-based industry mix of the region, this number could be on the low side.

8.6. Skill requirements

ACT's WorkKeys sample skill-assessment scores (available at www.workkeys.com) follow:

Title/O*NET Number/Career Cluster/Career Area		Applied Math	Applied Technology	Listening	Locating Information	Observation	Reading for Information	Teamwork	Writing
Computer Systems Analysts	**Median Scores**	**5**	**3**	**4**	**5**	**4**	**5**	**4**	**3**
	Range	3-6	3-5	3-5	3-5	3-6	3-6	3-5	3-4
15-1051.00 R J	Number of Jobs	21	4	13	21	17	22	13	12

Specific skill requirements, as determined from primary interviews, appear to be related to specific system package certification. Examples cited in our interviews include CISCO, Vista by Epicor, PeopleSoft, SAP and even Microsoft Office. Computer systems analysts would be looked at to design, implement and manage these "shrink-wrapped" products for their employers. Some projects would involve simply loading the software and ensuring that it doesn't malfunction, like Microsoft Office, and others would involve much deeper customization.

In other instances, computer systems analysts will also be needed to ensure that businesses have the appropriate computer and network system architecture. They may be required to design the optimal system (again, bringing together multiple components and not necessarily creating new products). We especially found the systems-architecture need to be prevalent in the health-care industry, but this cannot be a blanket conclusion due to the relatively-small sample size of our interviews.

8.7. Skill gaps

Anecdotal evidence of the gaps is presented in Section 8.1.'s occupational overview. Our conclusion from the interviews conducted is that this appears to be a systemic concern for EGR-3. The technology gap in our region runs throughout too many industries for anything but the broadest conclusions to be drawn. The likely outcome of not filling these critical gaps is a continuation of recent history, in that we will continue to lose high-wage jobs from Northeast Indiana and edge further into a low-wage, low-skill future.

Adding to that conclusion, the economic-development component of the skill gap in computer systems analysts (or the alternative occupational titles listed in Section 8.3.) was also one of the more persuasive elements in our determination to make this occupation SSI-worthy. An EGR-3 economic development professional wrote,

> "[A] corporate HR in Chicago was looking for individuals to fill a business analyst position and a quality assurance manager position for their local regional administration office here in Fort Wayne. They had been searching for four to six months with no success and finally hired a headhunter to recruit qualified individuals. This situation could have an additional impact to the community as the company in question was looking to expand the local operation and hire additional staff as they consolidate. The company is now hesitant to move additional jobs to Fort Wayne because of the IT situation they experienced and their concern that they would have difficulty finding qualified individuals in the area to fill the new jobs they would bring to Fort Wayne.
>
> Our other comment is not related to a particular project but more a general feel or option of the field. When the IT job bubble popped a couple of years ago we believe that the "generalists" in that field have either taken a different type of job or moved to another region of the country. Those with higher IT skills have been absorbed into the remaining jobs within the community and that a void of qualified employees who are highly skilled to meet the technology demands of today's companies is now being created."[59]

[59] Hobson, Ken, Fort Wayne-Allen County Economic Development Alliance. "IT and the Strategic Skills Initiative." Email to the author. 17 Oct. 2005.

9. Industry Endorsement

In our expert-guided, demand-driven methodological model, our conclusions are directly drawn from our community and industry expert guidance. Nothing would have been proposed in this report without the leadership from our community and industry experts, all of which consented to surveys and questionnaires that are on file in the NIWIB offices.

At the same time, we wanted to ensure that the final report kept with the spirit of our ongoing dialogue, so we vetted a preview of the report with a select few community and industry experts, as well as with our Lead Team and Consortium. Their responses follow:

Karen Goldner, Director of Special Projects, FourthWave, LLC (Fort Wayne – Information technology): "Thank you for the opportunity to review and comment on the Strategic Skills Initiative skills shortage report. It is a very well done analysis and will serve our region well.

"As a software development company, we are especially sensitive to the need for developers who are systems thinkers. We appreciate NIWIB including this important component in its analysis.

"Formerly, I worked in economic development for a number of years and can attest to the validity of your analysis of manufacturing. Manufacturing can continue to be an important part of our regional economy but only if we continue moving toward higher value added processes and products. To be able to do so, our manufacturers need employees with continually higher skills.

We support the report and look forward to continuing to work with NIWIB on this important initiative."

A representative of CME Mitsuba Automotive (Monroeville – Advanced manufacturing): "I appreciate the opportunity to respond. As with many companies in this area, we often struggle trying to find the "right person" for specific job classifications; especially in technical areas such as Quality Engineering, Manufacturing Engineering and Maintenance. I am satisfied with the results we've experienced from WorkKeys as we have been able to place candidates into production assembly positions that have the skills, knowledge and abilities to perform the tasks we require. WorkKeys has been a valuable tool that we utilize for recruiting, selecting and internal promotions. Unfortunately, we have not been as successful recruiting and placing individuals into the higher level technical positions.

"We often use recruiting services (headhunters) to locate candidates. Most of our candidates typically are not from this area. Therefore, we incur expenses paying recruiters a percentage of the first year salary and we are also paying to relocate families to this area. It would be nice to recruit from northeast Indiana, but this is not always possible because those candidates do not exist. The additional costs recruiting qualified individuals, impacts my businesses ability to compete, as we compete with foreign companies that pay 1/20th of what our employees earn. It's tough!

"I'm pleased that NIWIB and the Fort Wayne Chamber are pursuing the Skills Initiative as we would definitely gain the competitive edge if we were only able to recruit from our own backyard. I believe a concerted effort between the state, schools and business is necessary to overcome skills shortages in this area. We need to invest in our future, by providing knowledge from education, training, mentor programs, etc. that will ensure there are qualified technical personnel available to fill the needs of local employers. It will require involvement from all areas to overcome the shortage of skilled workers. Working together makes this initiative possible.

"I also like the proactive approach we are taking in northeast Indiana through this report. I do hope we are successful in achieving our objectives at the state level.

"Thanks again for the efforts of the WIB, Fort Wayne Chamber and others in helping business survive and grow in northeast Indiana."

Jason Wardwell, Administrator, Bradner Village Health Care (Marion – Health care delivery): "I looked through the report, and I endorse the goals presented here. Of particular interest was the definition of technology, which is not so much a product, but a means by which to do business. It's a tool. As our various industries get smarter and faster and more efficient, technology becomes a bigger and bigger player. More and more people will be required to interface with various pieces of technology, even if they don't have a 'technical' job. We look forward to working with you in any way that we can to help with this shortage. Thank you."

Stacey Smith, Prairie Quest Consulting (Fort Wayne – Information technology): "I thought this was well done. After spending yesterday at the Technology conference where it was noted that Indiana continues to slide in the technology focus, I thought it might be worth mentioning that there was a significant point that was made regarding a changing culture. To stay current, we must start thinking they way our younger (sometime challenging) youth do. Going forward, we will need to learn that our technology needs to be on demand and personalized to the individuals needs. Thanks!"

Karen Rollins, Human Resources, Busche Enterprises (Albion – Advanced manufacturing): "Looks good to me! Thanks!"

Sheila Dishman, Human Resources Coordinator, Marion General Hospital (Marion – Health care delivery): "I've had a chance to look over the draft of the Indiana Strategic Skills Initiative Report and it looks like you've covered it well. The RN shortage is a real concern for many hospitals and I look forward to working with you on this."

Ken Hobson, Project Manager – Financial Services, Fort Wayne-Allen County Economic Development Alliance: "All in all I thought that the document has been put together very well and that the material included in the report supported the selection of your targeted industries and jobs. I also thought that it was good to identify those other areas listed in Section 10."

Kim Pontius, Executive Director-Corporate & Continuing Education Services, IVY Tech Community College-Northeast: "Well, after a quick review I must say that this report is a very impressive body of work. Especially considering the time constraint you were all dealing with. I focused on the message, especially the part that deals with the advanced manufacturing component. Please convey to [the staff] how well I feel you all processed the tremendous body of information surrounding this subject and converted it into such an easily understood form. This should make an impact on anyone who takes time to read it. Congratulations on a job well done."

Lincoln Schrock, Executive Director, Indiana Northeast Development (Consortium): "The SSI report you are about to submit to the state is right on the money. I haven't seen a more rigorously researched workforce development initiative in the past 23 years. When the data, per se, came up short in clearly delineating job targets for pursuit, you correctly turned to a host of truly informed sources to ascertain our future occupational needs in the region - and your findings in that regard have been unmistakably validated by our employers themselves along with a broad cross-section of those who serve them.

"In terms of promoting high growth, high wage jobs in Northeast Indiana, we can all agree that our appropriate focus should be on advanced manufacturing, health services, and transportation/logistics and, more specifically, on those core competencies necessary to support, sustain, and extend the industrial endeavors in question. In short, you have formulated a proposal that speaks very directly to our employment needs here in Northeast Indiana."

Dean John Wellington, School of Business, Indiana University-Purdue University at Fort Wayne (Lead Team): "As a representative of higher education on the SSI Lead Team, I am pleased to see the role higher education can play in developing and growing the occupation base and skill set of the northeast Indiana workforce. There are opportunities for every educational institution to be a significant player in career and workforce development. Let's join the team in moving the SSI and, in turn, northeast Indiana to the next level."

Tom Braun, Central Labor Council (Lead Team): “I approve of the Shortage Report draft. It is an impressive accomplishment over all. There is a point I would like to make. This effort should align with the needs of the **Community** not just the needs of the LEDO's and Chambers of commerce. They are not always the same.”

Kirk Kemmish, Northeast Indiana Corporate Council (Lead Team): “Please use this email as a response to my review and approval for the report at this point in time. From my perspective I feel I should qualify my comments in two ways. First, we learned, not so quickly, that the data did not provide the information that was needed to clearly evaluate skills shortages. There are many high growth industries and businesses that just don't show up within the data sources provided. Second is the fact that due in part to this issue, there was not adequate time to do the job that is required and much more must be done. The report is very well done for the time allowed, but that was not adequate to do the job that is required.”

Mike Ottenweller, Ottenweller Co. (Lead Team): “Great job on this report. I will be happy to put my name on it.”

10. Other findings

SSI intelligence gathering revealed additional key information pieces that merit further discussion. This information is broken into two areas, general skills shortages and unaddressed demand. It is presented in this report as an acknowledgement of additional workforce needs in Northeast Indiana, some of which lie beyond the scope of the SSI project.

10.1. Basic skills shortages per primary research

Largely drawn from the LEDO interviews, but also to a lesser degree from industry response, was a desire for a continued general upgrade in a combination of work-preparedness skills for our workforce, including workplace literacy, work ethic and an increase in the proportion of degreed workforce.

In both instances, we could not make the intuitive leap to state that an improvement in workplace literacy or work ethic would specifically address the key skill needs of our target occupations. These are, however, critical workforce issues that demand the continued attention of Northeast Indiana's leadership – from educators to business to government to the NIWIB itself. To overlook any of these areas in the pursuit of technology skills, nursing degrees or production equipment certifications is counterproductive at best.

10.1.1. Workplace Literacy

According to the Indiana Chamber of Commerce's 2005 "A Demand-Side Strategy to Meet Indiana's Workforce Basic Skills Challenge" report, one in three employed Indiana residents lack the basic literacy skills required for employment in the 21st century knowledge economy.[60] According to this report, Indiana appears to be replete with manufacturing skills but a deficit of knowledge-based skills. The authors then make a chilling statement:

> "Faced with substantial learning deficiencies in the Indiana workforce, [employers] will be forced to choose between competing only in low wealth-creating and low-wage segments of their markets, or possibly considering relocation to regions where they can find more highly-skilled workers."[61]

Both options are unacceptable. Therefore, it is incumbent on all of us to change the premise of the argument.

[60] "A Demand-Side Strategy to Meet Indiana's Workforce Basic Skills Challenge," p. 5.
[61] Ibid, p. 8.

Community, education and business partnerships fostered in part by the October 2005 Northeast Indiana Youth Education Summit should work toward addressing this issue for our rising workforce. Other inclusive community partnerships should form around the same issue for the incumbent workforce.

10.1.2. Work Ethic

The near-universal demand for improved work ethic from both LEDOs and industry experts should be a wake-up call for every resident of Northeast Indiana. At the LEDO level, when we were asking for feedback on key skills needed by their workforces to succeed in today's economy, the overwhelming top response was an improvement in the work ethic of the workforce.

There are many rationales for the deterioration in our community work ethic, but this report will not look to add to that discussion. It serves no purpose to do so. Regardless of the cause, we all must come together as a larger community – of families, schools, businesses and government – to promote positive, productive behavior in both our emerging and incumbent workforce.

The newly-announced pilot of a state-endorsed **WorkEthic** program for our emerging workforce is an excellent start to systematically addressing this critical issue.[62] We proudly note that this state program was modeled after a successful pilot partnership between the NIWIB, the East Allen County School Corporation and the New Haven Chamber of Commerce. Every school corporation in EGR-3 should embrace this program, and every business should be asking for **WorkEthic** certification when hiring our high school graduates.

Work ethic is not just a matter for the emerging workforce, however. A similar program is needed for our incumbent workforce, and employers should creatively promote and reward the positive work behaviors that they so loudly state that they want.

10.1.3. Degreed workforce

Especially in the northern edge of EGR-3, we detected a clear demand for a higher proportion of our workforce to carry post-high school degrees and certifications. This is a classic case of chicken-and-egg. A degreed workforce will not stay in a community that cannot provide it with meaningful jobs, but knowledge-intensive businesses (that would likely want to hire a degreed workforce) won't locate in a community that doesn't have a ready supply of qualified workers.

While this was a stated need across a section of our region, the list of LEDO-targeted industries across our region in Section 10.4.2. tells us that the need for a well-educated

[62] http://www.in.gov/dwd/newsroom/news_releases/NR_10-13-05.pdf

workforce is universal to Northeast Indiana. This report offers no magic solution to this problem, but it can highlight one innovative solution in the VentureWorks program.

VentureWorks is a collaborative effort between the Huntington County United Economic Development, the Northeast Indiana Innovation Center and Huntington University. Huntington University's Ned Kiser explains the program best when he says, "Like most of northeast Indiana, the Huntington County economy has traditionally been driven by manufacturing and agriculture, but we see the real future growth of our area coming from entrepreneurial startups and new ventures by established businesses."[63] In short, VentureWorks intends to spark economic development by growing from within, by strategically aligning our existing workforce, degreed and otherwise, with opportunity. This program warrants ongoing attention and support as a likely best-practice model for the entire EGR-3 region.

10.2. Other uncovered demand to address in future non-SSI NIWIB efforts

Knowing that time and resources were limited on this project, we understood that not every demand area would be included in the Northeast Indiana SSI. A number of other industries did prove promising, and are worth the investment of institutional attention in future strategic workforce planning scenarios. In no particular order of importance, they follow:

10.2.1. Transportation, distribution & logistics

Of all the non-SSI industry areas, the demand in the broad logistics industry area combining truck transportation and warehousing was among the most profound, and compelling. Significant research and data gathering was performed before a decision was made to focus on our other occupation/skill areas, knowing that the proposed focus on the computer system analyst occupation has significant potential in transportation, distribution and logistics.[64]

Historically, Northeast Indiana has used its transportation network as a means to achieve wealth. From trappers and traders along our rivers to boatmen steering barges along the canals to today's combination of rails, road and air, this region has a long-standing affinity for transportation, logistics and the distribution of goods.

Northeast Indiana retains its prominence in Midwest transportation and logistics today. Even in 2003 (before the impact of the repeal of Indiana's personal property tax on inventory could be felt), LQs for EGR-3's NAICS codes 48 and 49 (Transportation and Warehousing) stood at 1.04. NAICS code 484 (Truck Transportation) was 1.92 and NAICS code 493 (Warehousing and Storage) was 1.44. The recently announced large

[63] http://www.huntingtonecondev.com/ventureworks.html
[64] Summit 8. TechPoint. Accessed 3 Nov. 2005 <http://www.techpoint.org/summit8/agenda2006.htm >.

logistics expansions in Grant County and elsewhere in Northeast Indiana stand to increase our LQs even further.

The combination of a repeal of the Inventory Tax coupled with the ideal ground-transportation landscape (the north-south I-69 and US 27 intersected by I-80/90, US 6, US 20, US 24, US 30, US 33, US 35 and US 224; significant Chicago-oriented rail lines highlighted by Norfolk-Southern, RailAmerica, Indiana Northeastern and Wabash Central makes Northeast Indiana home to some of the busiest rail lines in America.[65]) and a heavy cargo-capable regional airport present an ideal opportunity for Northeast Indiana to further develop its transportation expertise, as suggested by the LEDO matrix of targeted industries in Section 10.4.2.

While conducting background research and intelligence gathering on the scale of the other SSI industry areas, we encountered a number of challenges in trying to identify a high-wage, high-demand skill area within this industry area. Warehousing, the heart of a regional-transportation model, could not produce sufficient wages to meet our "high-wage" model. Truck drivers, while in high demand and definitely high wage (a regional long-haul company pays its drivers an average of $58,000+/year), are subject to industry-wide quality of life issues that are beyond the capacity of one EGR to solve. Against these obstacles – and subject to the time constraints of the SSI project – we were forced to move to other, more immediately productive pursuits.

Not including transportation/logistics in our SSI model does not reflect on our feelings about this industry area. On the contrary, we feel that it is one of the industries with the most promise for the transitioning workforce in our Northeast Indiana economy. We strongly encourage all of our economic development partners and community leaders to continue to foster a viable transportation and logistics industry. After all, you can't ship truck drivers offshore, and products must be delivered to market by someone.

10.2.2. Biomedical sciences

Unquestionably, biomedical sciences and bioengineering are the source of a vast quantity of innovation and wealth today. We recognize that the Kosciusko County-based orthopedics industry is a major factor in the Indiana biomedical business structure. At least six counties in EGR-3 have some degree of activity in the life sciences, largely in manufacturing, so we believe that our CNC-skills development area will be supported by orthopedics-parts manufacturers as a means to develop a qualified workforce.

Beyond the manufacturing side of biomedical business, there is the "pure" biology-based biomedicine. Including everything from gene research to organically-generated orthopedic parts to pharmaceutical production, this industry area is filled with potential.

[65] http://www.trainweb.org/fwarailfan/

As this industry develops further in Northeast Indiana, public-sector entities like the NIWIB should strongly consider developing innovative ways to ensure that an EGR-3 biomedical industry is never short on workforce.

10.2.3. Software Engineers/Programmers

A side effect of reviewing the need in computer systems analysts was that we uncovered a small but growing need for computer software engineers and programmers. This area is a natural career progression from the computer systems analyst occupation and, as such, warrants ongoing attention as the computer systems analyst population grows.

10.2.4. Recreational Vehicles/Manufactured Housing (RV/MH)

The RV/MH industry, along with its ancillary RV/MH parts, cargo trailer and marine industries, is in the midst of one of its most successful cycles in its industry's lifespan. The industry, however, has a meaningful EGR-3 presence only in Adams and LaGrange Counties, making the applicability of a true Northeast Indiana SSI project less than universal. The jobs in these facilities can pay excellent wages, though, and could be a good fit for a manufacturing-based workforce in transition.

10.2.5. Building Trades

The projected significant labor shortfall, high-wage levels and specificity of skills makes the building trades an ideal candidate for SSI. This industry fell short, however, against our Northeast Indiana SSI criteria emphasizing traded industries and clusters. With our economy needing to realign itself, we felt it best to invest our SSI funds in industries that could generate wealth – and keep those in the building trades and other service-sector industries employed.

Jobs for the Future's "Right Jobs" report lists three occupations – carpenters, electricians and plumbers – as ideal occupations for transitional economy workers whose old skills may not be as relevant today.[66] That, combined with the strong skill-development programs already in place within the trades, makes building trades another important industry to partner with going forward.

[66] Goldberger et al., p. 34.

11. Appendices

11.1. Location Quotients by Wages in EGR-3, from 1994 to 2004

ECONOMIC GROWTH REGION #3

LOCATION QUOTIENTS BY THREE-DIGIT NAICS CODES (ARRANGED BY AVERAGE WEEKLY WAGES)

NAICS CODE	AVG. WEEKLY WAGE PER JOB	INDUSTRY	2004 LOCATION QUOTIENT	1994 LOCATION QUOTIENT	1994-2004 MAJOR CHANGE IN LQ
722	$205	Food Services and Drinking Places	1.09	1	
813	$254	Religious, Grantmaking, Civic, Professional, and Similar Organizations	0.86	0.7	
721	$255	Accommodation	0.39	0.4	
713	$262	Amusement, Gambling, and Recreation Industries	0.54	0.5	
448	$279	Clothing and Clothing Accessories Stores	0.43	0.6	
447	$285	Gasoline Stations	1.26	1.1	UP
445	$300	Food and Beverage Stores	0.75	0.9	
452	$325	General Merchandise Stores	1.2	1.00	
453	$325	Miscellaneous Store Retailers	1.04	0.9	
451	$339	Sporting Goods, Hobby, Book, and Music Stores	0.81	0.7	
624	$365	Social Assistance	1.01	0.6	UP
812	$389	Personal and Laundry Services	0.91	1	
561	$417	Administrative and Support Services	0.71	1.00	DOWN
623	$424	Nursing and Residential Care Facilities	1.15	1.1	
446	$430	Health and Personal Care Stores	0.86	1	
443	$470	Electronics and Appliance Stores	0.83	0.9	
444	$498	Building Material and Garden Equipment and Supplies Dealers	1.27	1.2	
531	$541	Real Estate	0.52	0.5	
811	$545	Repair and Maintenance	0.98	1.00	
532	$547	Rental and Leasing Services	0.65	N/A	
611	$576	Educational Services	0.81	0.8	
425	$599	Wholesale Electronic Markets and Agents and Brokers	0.55	0.7	
921	$616	Executive, Legislative, and Other General Government Support	1.09	0.9	UP
323	$632	Printing and Related Support Activities	1.87	1.4	UP
493	$642	Warehousing and Storage	1.3	1.1	
492	$645	Couriers and Messengers	0.83	0.6	UP
511	$645	Publishing Industries (except Internet)	0.68	1	DOWN
337	$663	Furniture and Related Product Manufacturing	2.13	1.2	UP
441	$694	Motor Vehicle and Parts Dealers	1.04	1.1	
424	$730	Merchant Wholesalers, Nondurable Goods	1.12	1	
238	$739	Specialty Trade Contractors	0.89	0.9	
622	$741	Hospitals	1.09	1.00	
236	$749	Construction of Buildings	0.89	0.9	

332	$752	Fabricated Metal Product Manufacturing	2.94	2.5	UP
311	$757	Food Manufacturing	1.05	0.9	
339	$759	Miscellaneous Manufacturing	1.88	2.1	
326	$766	Plastics and Rubber Products Manufacturing	4.5	4.1	UP
522	$771	Credit Intermediation and Related Activities	0.89	0.9	
321	$801	Wood Product Manufacturing	1.83	1.5	UP
484	$823	Truck Transportation	1.92	2	
491	$842	Postal Service	0.92	0.6	
327	$842	Nonmetallic Mineral Product Manufacturing	1.82	2.1	DOWN
541	$863	Professional, Scientific, and Technical Services	0.45	0.5	
322	$867	Paper Manufacturing	1.74	1.3	UP
333	$879	Machinery Manufacturing	2.62	2	UP
331	$959	Primary Metal Manufacturing	5.7	4.5	UP
423	$1,006	Merchant Wholesalers, Durable Goods	1.06	0.9	UP
237	$1,008	Heavy and Civil Engineering Construction	0.56	0.5	
335	$1,029	Electrical Equipment, Appliance, and Component Manufacturing	2.75	3.3	DOWN
336	$1,033	Transportation Equipment Manufacturing	4.22	4	UP
524	$1,042	Insurance Carriers and Related Activities	1.01	1.2	DOWN
621	$1,043	Ambulatory Health Care Services	0.91	0.8	
334	$1,049	Computer and Electronic Product Manufacturing	2.07	2.8	DOWN
517	$1,057	Telecommunications	0.82	1	DOWN

LQ LESS THAN 0.5
LQ BETWEEN 0.5 AND 0.8
LQ BETWEEN 0.8 AND 1.0
LQ BETWEEN 1.0 AND 1.2
LQ BWTWEEN 1.2 AND 1.5
LQ GREATER THAN 1.5

11.2. EGR-3 Average Annual Employment Only by NAICS Code by Wage

NAICS CODE	AVG. WEEKLY WAGE PER JOB	INDUSTRY	1994 AVERAGE ANNUAL EMPLOYMENT	2004 AVERAGE ANNUAL EMPLOYMENT
722	$205	Food Services and Drinking Places	21,783	25,441
813	$254	Religious, Grantmaking, Civic, Professional, and Similar Organizations	2,466	3,011
721	$255	Accommodation	1,824	1,890
713	$262	Amusement, Gambling, and Recreation Industries	1,881	2,315
448	$279	Clothing and Clothing Accessories Stores	2,438	1,559
447	$285	Gasoline Stations	2,791	2,894
445	$300	Food and Beverage Stores	7,658	5,611
452	$325	General Merchandise Stores	7,676	9,148
453	$325	Miscellaneous Store Retailers	2,214	2,516
451	$339	Sporting Goods, Hobby, Book, and Music Stores	1,267	1,377
624	$365	Social Assistance	2,860	5,908
812	$389	Personal and Laundry Services	3,351	3,047
561	$417	Administrative and Support Services	15,795	14,165
623	$424	Nursing and Residential Care Facilities	7,975	9,149
446	$430	Health and Personal Care Stores	2,320	2,131
443	$470	Electronics and Appliance Stores	1,089	1,135
444	$498	Building Material and Garden Equipment and Supplies Dealers	3,401	4,129
531	$541	Real Estate	1,886	2,009
811	$545	Repair and Maintenance	3,312	3,200
532	$547	Rental and Leasing Services	N/A	1,104
611	$576	Educational Services	21,173	24,423
425	$599	Wholesale Electronic Markets and Agents and Brokers	1,398	1,005
921	$616	Executive, Legislative, and Other General Government Support	7,493	8,767
323	$632	Printing and Related Support Activities	3,397	3,269
493	$642	Warehousing and Storage	1,408	1,929
492	$645	Couriers and Messengers	836	1,217
511	$645	Publishing Industries (except Internet)	2,496	1,628
337	$663	Furniture and Related Product Manufacturing	2,322	3,191
441	$694	Motor Vehicle and Parts Dealers	5,113	5,225
424	$730	Merchant Wholesalers, Nondurable Goods	13,550	5,872
238	$739	Specialty Trade Contractors	8,421	10,325
622	$741	Hospitals	14,625	15,693
236	$749	Construction of Buildings	3,277	3,795
332	$752	Fabricated Metal Product Manufacturing	11,813	11,566
311	$757	Food Manufacturing	4,241	4,107
339	$759	Miscellaneous Manufacturing	4,456	3,244
326	$766	Plastics and Rubber Products Manufacturing	10,373	9,529
522	$771	Credit Intermediation and Related Activities	6,597	6,586

321	$801	Wood Product Manufacturing	2,493	2,649
484	$823	Truck Transportation	7,066	6,834
491	$842	Postal Service	1,524	1,916
327	$842	Nonmetallic Mineral Product Manufacturing	3,204	2,390
541	$863	Professional, Scientific, and Technical Services	7,319	8,222
322	$867	Paper Manufacturing	2,550	2,255
333	$879	Machinery Manufacturing	8,295	7,832
331	$959	Primary Metal Manufacturing	8,209	6,991
423	$1,006	Merchant Wholesalers, Durable Goods	6,815	8,193
237	$1,008	Heavy and Civil Engineering Construction	1,432	1,613
335	$1,029	Electrical Equipment, Appliance, and Component Manufacturing	5,719	3,208
336	$1,033	Transportation Equipment Manufacturing	24,026	19,936
524	$1,042	Insurance Carriers and Related Activities	6,943	5,700
621	$1,043	Ambulatory Health Care Services	9,319	12,049
334	$1,049	Computer and Electronic Product Manufacturing	13,603	7,159
517	$1,057	Telecommunications	2,766	2,217

EMPLOYMENT BETWEEN 5,000 AND 9,999

EMPLOYMENT OF 10,000 OR GREATER

11.3. 2002-2012 Employment Projections by NAICS Code

NAICS CODE	AVG. WEEKLY WAGE PER JOB	INDUSTRY	2002 BASE YEAR EMPLOYMENT	2012 PROJECTED EMPLOYMENT	2002-2012 PROJECTED JOB GROWTH/DECLINE
722	$205	Food Services and Drinking Places	24,260	26,180	1,920
813	$254	Religious, Grantmaking, Civic, Professional, and Similar Organizations	3,020	3,580	560
721	$255	Accommodation	1,990	2,140	150
713	$262	Amusement, Gambling, and Recreation Industries	2,150	2,530	380
448	$279	Clothing and Clothing Accessories Stores	1,500	1,090	(410)
447	$285	Gasoline Stations	2,900	3,190	290
445	$300	Food and Beverage Stores	5,730	4,260	(1,470)
452	$325	General Merchandise Stores	9,390	9,340	(50)
453	$325	Miscellaneous Store Retailers	2,670	2,830	160
451	$339	Sporting Goods, Hobby, Book, and Music Stores	1,380	1,280	(100)
624	$365	Social Assistance	5,070	7,250	2,180
812	$389	Personal and Laundry Services	2,940	2,960	20
561	$417	Administrative and Support Services	12,710	15,180	2,470
623	$424	Nursing and Residential Care Facilities	8,910	10,740	1,830
446	$430	Health and Personal Care Stores	2,070	1,810	(260)
443	$470	Electronics and Appliance Stores	1,220	1,530	310
444	$498	Building Material and Garden Equipment and Supplies Dealers	3,660	4,060	400
531	$541	Real Estate	1,850	1,810	(40)
811	$545	Repair and Maintenance	3,290	3,290	-
532	$547	Rental and Leasing Services	1,080	1,050	(30)
611	$576	Educational Services	24,490	29,960	5,470
425	$599	Wholesale Electronic Markets and Agents and Brokers	1,600	1,170	(430)
921	$616	Executive, Legislative, and Other General Government Support	N/A	N/A	N/A
323	$632	Printing and Related Support Activities	3,080	3,070	(10)
493	$642	Warehousing and Storage	2,110	2,140	30
492	$645	Couriers and Messengers	1,320	1,400	80
511	$645	Publishing Industries (except Internet)	1,750	1,210	(540)

337	$663	Furniture and Related Product Manufacturing	2,780	4,470	1,690
441	$694	Motor Vehicle and Parts Dealers	5,150	5,390	240
424	$730	Merchant Wholesalers, Nondurable Goods	6,070	6,590	520
238	$739	Specialty Trade Contractors	10,270	10,930	660
622	$741	Hospitals	14,040	15,190	1,150
236	$749	Construction of Buildings	3,620	4,180	560
332	$752	Fabricated Metal Product Manufacturing	11,630	12,600	970
311	$757	Food Manufacturing	4,020	4,480	460
339	$759	Miscellaneous Manufacturing	3,070	3,010	(60)
326	$766	Plastics and Rubber Products Manufacturing	9,880	11,600	1,720
522	$771	Credit Intermediation and Related Activities	6,340	6,470	130
321	$801	Wood Product Manufacturing	2,760	3,140	380
484	$823	Truck Transportation	6,860	6,540	(320)
491	$842	Postal Service	2,140	1,830	(310)
327	$842	Nonmetallic Mineral Product Manufacturing	2,680	2,440	(240)
541	$863	Professional, Scientific, and Technical Services	8,290	9,200	910
322	$867	Paper Manufacturing	2,370	2,620	250
333	$879	Machinery Manufacturing	8,950	8,370	(580)
331	$959	Primary Metal Manufacturing	8,440	9,990	1,550
423	$1,006	Merchant Wholesalers, Durable Goods	8,040	8,230	190
237	$1,008	Heavy and Civil Engineering Construction	1,660	1,880	220
335	$1,029	Electrical Equipment, Appliance, and Component Manufacturing	3,870	3,470	(400)
336	$1,033	Transportation Equipment Manufacturing	20,570	20,510	(60)
524	$1,042	Insurance Carriers and Related Activities	6,780	5,720	(1,060)
621	$1,043	Ambulatory Health Care Services	11,290	15,110	3,820
334	$1,049	Computer and Electronic Product Manufacturing	9,190	6,010	(3,180)
517	$1,057	Telecommunications	2,650	2,670	20

2002-2012 PROJECTED JOB GROWTH BETWEEN 500 AND 999

2002-2012 PROJECTED JOB GROWTH OVER 1,000

11.4. Local Economic Development survey, matrix and respondents

11.4.1. Sample LEDO Survey

NORTHEAST INDIANA WORKFORCE INVESTMENT BOARD

Strategic Skills Initiative
Initial LEDO interview questionnaire

1. What industries or clusters do you consider as your region's economic foundation?

2. What skill shortages exist in those industries or clusters that deter you from further growing them in your region?

    a. Please provide contact information for 5 leaders in these core industries/clusters with whom we can further discuss these skill shortages.

3. What industries or clusters are you proactively targeting in your economic development efforts?

4. (If answers 1 and 3 are different) What skill shortages exist in these industries or clusters that keep you from achieving a greater level of success?

    a. Please provide contact information for 5 leaders in these targeted industries/clusters with whom we can further discuss these skill shortages.

5. May we use your name in contacting the leaders you have identified?

6. We appreciate the desire for some information to be confidential. Do you want your information to be anonymously attributed in our reports to Indiana Workforce Development?

11.4.2. LEDO survey response matrix – Industries/Clusters

SSI - LEDO Interviews (9/19/2005-9/23/2005)

	Aerospace	Agriculture/Food products	Alternative Energy	Auto Parts mfg.	Distribution/Logistics	Health care delivery	Chemical products	Communications technologies (Defense)	Culture/Recretion	Education	Electronics parts mfg.	Entrepreneurial development	Financial Services	Furniture/Woodworking	"High Tech"/IT/Internet	Medical parts mfg.	Musical instruments	Pharmaceuticals	Plastics products mfg.	Professonal business svcs. (Law, architecture, finance, engineering)	Publishing	Recreational Vehicles/Manufactured Housing	SATS/Aircraft parts mfg.	Steel/Metal products mfg.	Tourism
	FOUNDATIONAL INDUSTRIES OR CLUSTERS																								
IEDC		X		x				x					x						x					x	
Indiana NE Devp.				x	x	x		x	x	x										x				x	
Allen Co.		X		x	x			x					x			x			x						
Grant Co.		X		x	x	x				x									x						
City of Auburn/De Kalb Co.				x	x		x												x			x		x	x
Noble Co.		X		x	x	x				x															
1- County		X		x										x								x			x
2 - County				x																					x
3 - County		X		x	x						x								x		x				
4- City				x																					
5 - County				x	x											x	x								
6 - County				x										x								x			
	TARGET INDUSTRIES OR CLUSTERS																								
IEDC		X		x				x					x						x					x	
Indiana NE Devp.			x																				x		
Allen Co.		X		x	x			x					x			x			x						
Grant Co.		X		x	x	x				x									x						
City of Auburn/De Kalb Co.				x	x										x	x			x					x	x
Noble Co.		X			x											x									
1 - County																x									
2 - County					x										x	x			x						
3 - County				x	x											x									
4 – City				x	x											x						x	x		
5 - County					x											x		x							
6 - County														x								x			

11.4.3. LEDO survey response matrix – Skills

	Airframe/Power plant mechanics	CNC/Machine oper./ Machine maintenance	Computer drafting/CAD-CAM	Engineering - Mechanical/Electrical	English as a Second Language	Entrepreneurial skills	IT/Systems operators & analysts	K-14 education outlook	Lean mfg. skills	Management skills	Post-secondary degrees	Registered Nurses & All Health care certificates	Special equipment installation	Truck drivers	Underwriters	Welding	Work Ethic	Workplace Literacy & Math skills
FOUNDATIONAL INDUSTRIES OR CLUSTERS - SKILLS SHORTAGES																		
IEDC		x		x			x			x								
Indiana NE Devp.																		
Allen Co.	x	x												x	x			
Grant Co.		x										x					x	
City of Auburn/De Kalb Co.		x						x									x	
Noble Co.		x					x										x	x
1- County		x			x	x										x		
2 - County																		
3 - County		x		x								x					x	
4- City									x							x	x	
5 - County		x															x	
6 - County			x									x					x	
TARGET INDUSTRIES OR CLUSTERS - SKILLS SHORTAGES																		
IEDC																	x	x
Indiana NE Devp.																		
Allen Co.																		
Grant Co.																		
City of Auburn/De Kalb Co.											x							
Noble Co.																		
1 - County											x							
2 - County											x							
3 - County						x												
4 - City																		
5 - County																		
6 - County													x					

Note – LEDOs listed as 1 through 6 requested that their responses be treated anonymously or asked for prior approval of publication of any questionnaire responses. Due to time constraints, it was agreed to keep those responses anonymous as well.

11.4.4. LEDO interview and survey participants

Live Interviewees:

NAME	ORGANIZATION	GEOGRAPHIC REACH
Michael Ripley	Adams Co. EDC	Adams Co.
Lincoln Schrock	Indiana Northeast Development	Adams, Allen, De Kalb, Huntington, Lagrange, Noble, Steuben, Wells, Whitley
Jonathan Myers	IEDC	IEDC NE Region
Carol Pugh	Huntington County United EDC	Huntington Co.
Dorinda Heiden	Whitley County EDC	Whitley County
Norman Yoder	Mayor of Auburn	De Kalb County
John English	Pres., Noble County EDC	Noble County
Luann Coda	Kendallville Area Chamber	Kendallville/Noble County
Kim Forker	Lagrange County Economic Development/Chamber of Commerce	Lagrange County
Gary Nielander	Steuben Co. EDC	Steuben County
Timothy Eckerle	Grant County EDC	Grant County

Email survey responses were received from:

Rob Young	Fort Wayne/Allen County Economic Development Alliance	Allen County
Garry Jones	Wells County Chamber of Commerce	Wells County
Rob Pearson	President, Wabash County Economic Development Corp.	Wabash County

11.5. Industry Survey and Respondents

11.5.1. Industry Occupation/Skills Survey

NORTHEAST INDIANA WORKFORCE INVESTMENT BOARD

DATE: _____

COMPANY: _____

NAME/TITLE: _____

NORTHEAST INDIANA STRATEGIC SKILLS INITIATIVE
OCCUPATION AND SKILL QUESTIONAIRRE

Which occupations amount for the most workers in your business?

Which occupations are most critical to the competitiveness of your business?

Which skill sets are common in all of these occupations?

Which skill sets are unique to your critical occupations?

How easy or difficult is it for you to find substitutes for local workers in these occupations? (e.g., through technology, outsourcing, offshoring, etc.) *Check one*

____ Very difficult ____ Difficult ____ Easy ____Very easy

Which occupations are of emerging importance in your business? Which will provide you with the necessary competitive edge?

Which skill sets are unique to these emerging occupations?

If you cannot fill these emerging occupations with local workers, how will that affect your business? *Check one*

____ We will go out of business
____ We will struggle
____ We can manage
____ We can succeed without these workers locally

Thank you for completing this survey!

Please return your completed survey to:
Northeast Indiana Workforce Investment Board
Attn: Strategic Skills Initiative
1415 Magnavox Way, Suite 150
Fort Wayne, IN 46804
Phone: 260-459-1400 x 201
Fax: 260-436-5973
Email: Thomas.fellrath@neiwib.org

11.5.2. Industry Occupation/Skills Survey Respondents

Interview

Adams County Medical Center, Adams County – Health care delivery
Almet, Allen County – Advanced manufacturing
BAE Systems, Allen County – Advanced manufacturing
BF Goodrich, Allen County – Advanced manufacturing
Bluffton Regional Medical Center, Wells County – Health care delivery
Bradner Village Health Care Center, Grant County – Health care delivery
C & A Tool, Noble County – Health care delivery
CME Mitsuba Automotive, Allen County – Advanced manufacturing
Ecolab, Allen County
Flare, Allen County – Advanced manufacturing
Fort Wayne Metals Research, Allen County – Advanced manufacturing
FourthWave, Allen County – Information technology
GT Automation, Allen County – Advanced manufacturing
Hiner Transport, Huntington County – Transportation/Logistics/Warehousing
ITT Aerospace, Allen County – Information technology
JAT of Fort Wayne, Allen County – Transportation/Logistics/Warehousing
K & K Insurance, Allen County – Information technology
Lutheran Health System, Allen County – Health care delivery
Marion General Hospital, Grant County – Health care delivery
Northrop Grumman, Allen County – Information technology
Ottenweller Co., Allen County – Advanced manufacturing
Parkview Health, Allen/Huntington/LaGrange/Noble/Whitley Counties – Health care delivery
Raytheon, Allen County – Information technology
Steel Dynamics, Allen/De Kalb/Whitley Counties – Advanced manufacturing
Superior Precision, Whitley County – Advanced manufacturing
Triple Crown Industries, Allen County – Advanced manufacturing
Wal-Mart Distribution Center, De Kalb County – Transportation/Logistics/Warehousing

Email

City of Auburn, De Kalb County
Dean Foods, Huntington County
Dollar General Corporation Distribution Center, Grant County – Transportation/Logistics/Warehousing
Dunham's Sporting Goods Distribution Center, Grant County – Transportation/Logistics/Warehousing
Hayes-Lemmerz, Huntington County – Advanced manufacturing
Homier Distributing, Huntington County – Transportation/Logistics/Warehousing
Nishikawa Standard Co., Allen/LaGrange Counties
PrairieQuest Consulting, Allen County – Information technology
Shuttleworth, Huntington County – Advanced manufacturing
TransWorks, Allen County – Transportation/Logistics/Warehousing/IT
UTC/Carrier, Huntington County – Advanced manufacturing
Wal-Mart Distribution Center, Grant County – Transportation/Logistics/Warehousing

Online Survey

amerIPatent, Allen County – Information technology

Cornerstone Solutions, Allen County – Transportation/Logistics/Warehousing/IT
Indiana University-Purdue University Fort Wayne, Allen County
Northeast Indiana Corporate Council, Allen County
Wabash MPI/Carver, Wabash County – Advanced manufacturing
Zoom Information Systems, Allen County – Information technology

11.6. Registered Nurses – Additional information

11.6.1. Major employers likely to hire registered nurses

MAJOR EMPLOYERS OF INDUSTRIES MOST LIKELY TO HIRE REGISTERED NURSES				
ADAMS COUNTY	**NAICS CODE**	**CITY**	**EMPLOYEES**	**EST. SALES**
Berne Medical Ctr	Hospitals(622110)	Berne	100 - 249	$10,000 - $19,999
Chalet Village Health Care Ctr	Nursing & Convalescent Homes(623110)	Berne	50 - 99	$2,500 - $4,999
Adams County Memorial Hospital	Hospitals(622110)	Decatur	250 - 499	$20,000 - $49,999
Adams County Memorial Hospital	Hospitals(622110)	Geneva	100 - 249	$10,000 - $19,999
ALLEN COUNTY				
Fort Wayne Orthopaedics	Clinics(621493)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Lutheran Children's Hospital	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Lutheran Hospital of Indiana	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Parkview Health System	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
State Development Ctr	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Bethlehem Woods Nursing Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$2,500 - $4,999
Brooklyn Medical Assoc	Clinics(621493)	Fort Wayne	100 - 249	$20,000 - $49,999
Canterbury Nursing & Rehab Ctr	Retirement Communities & Homes(623311)	Fort Wayne	100 - 249	$5,000 - $9,999
Child Protective Svc	Social Service & Welfare Organizations(624190)	Fort Wayne	100 - 249	N/A
Covington Manor Nursing Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$5,000 - $9,999
Crossroad-Ft Wayne Children's	Social Service & Welfare Organizations(624190)	Fort Wayne	100 - 249	N/A
Ft Wayne Cardiology Inc	Physicians & Surgeons(621111)	Fort Wayne	100 - 249	$20,000 - $49,999
Interim Healthcare	Home Health Service(621610)	Fort Wayne	100 - 249	$2,500 - $4,999
Life Care Ctr of Fort Wayne	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$5,000 - $9,999
Oral & Maxillofacial Surgery	Dentists(621210)	Fort Wayne	100 - 249	$5,000 - $9,999

Orthopaedics Northeast	Physicians & Surgeons(621111)	Fort Wayne	100 - 249	$50,000 - $99,999
Parkview Health Laboratories	Laboratories-Medical(621511)	Fort Wayne	100 - 249	$10,000 - $19,999
Parkview North Hospital	Hospitals(622110)	Fort Wayne	100 - 249	$10,000 - $19,999
Regency Place of Fort Wayne	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$5,000 - $9,999
Rehabilitation Hosp-Ft Wayne	Hospitals(622110)	Fort Wayne	100 - 249	$10,000 - $19,999
Renaissance Village	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$5,000 - $9,999
Towne House	Retirement Communities & Homes(623311)	Fort Wayne	100 - 249	$5,000 - $9,999
Welfare Department	Social Service & Welfare Organizations(624190)	Fort Wayne	100 - 249	N/A
Woodview Healthcare Inc	Nursing & Convalescent Homes(623110)	Fort Wayne	100 - 249	$5,000 - $9,999
Ywca	Social Service & Welfare Organizations(624190)	Fort Wayne	100 - 249	N/A
American Red Cross	Social Service & Welfare Organizations(624190)	Fort Wayne	250 - 499	N/A
Arc of Northeast Indiana	Mental Retardation & Dev Disabled Svcs(624310)	Fort Wayne	250 - 499	N/A
Aws Vending Svc	Rehabilitation Services(624310)	Fort Wayne	250 - 499	$1,000 - $2,499
Dupont Hospital	Hospitals(622110)	Fort Wayne	250 - 499	$20,000 - $49,999
Family & Children Div	Government-Individual/Family Social Svcs(624110)	Fort Wayne	250 - 499	N/A
Lutheran Homes Inc	Retirement Communities & Homes(623311)	Fort Wayne	250 - 499	$10,000 - $19,999
Medical Group of Fort Wayne	Physicians & Surgeons(621111)	Fort Wayne	250 - 499	$50,000 - $99,999
Parkview Behavioral Health	Mental Health Services(622210)	Fort Wayne	250 - 499	$20,000 - $49,999
St Anne Home & Retirement	Nursing & Convalescent Homes(623110)	Fort Wayne	250 - 499	$5,000 - $9,999
VA Northern Indian Health Care	Hospitals(622110)	Fort Wayne	250 - 499	$20,000 - $49,999
Aging & In-Home Svc-NE Indiana	Senior Citizens Service Organizations(623312)	Fort Wayne	50 - 99	N/A
Allen County Youth Svc Ctr	Government-Individual/Family Social Svcs(624110)	Fort Wayne	50 - 99	N/A
Anthony Medical Assoc	Clinics(621493)	Fort Wayne	50 - 99	$10,000 - $19,999

Applewood Health & Rehab Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Arc of Northeast Indiana	Mental Retardation & Dev Disabled Svcs(624310)	Fort Wayne	50 - 99	N/A
Childrens Edu Care Ctr	Child Care Service(624410)	Fort Wayne	50 - 99	$1,000 - $2,499
Cornerstone Day Care Learning	Child Care Service(624410)	Fort Wayne	50 - 99	$1,000 - $2,499
County Health Dept	Clinics(621493)	Fort Wayne	50 - 99	$10,000 - $19,999
Courtland Health & Rehab Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Dupont Surgery Ctr	Clinics(621493)	Fort Wayne	50 - 99	$10,000 - $19,999
Family Practice Ctr	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$20,000 - $49,999
Fort Wayne Neurological Ctr	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$20,000 - $49,999
Ft Wayne Medical Oncology	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$10,000 - $19,999
Ft Wayne Opthalmology	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$10,000 - $19,999
Golden Years Homestead Inc	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$1,000 - $2,499
Heartland Home Health Care	Home Health Service(621610)	Fort Wayne	50 - 99	$1,000 - $2,499
Heritage Medical Staffing	Nurses & Nurses' Registries(621399)	Fort Wayne	50 - 99	$2,500 - $4,999
Heritage Park	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Indiana Medical Assoc	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$20,000 - $49,999
Indiana Medical Assoc	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$20,000 - $49,999
Indiana-Ohio Heart	Physicians & Surgeons(621111)	Fort Wayne	50 - 99	$10,000 - $19,999
Kingston Care Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Lifeline Youth & Family Svc	Social Service & Welfare Organizations(624190)	Fort Wayne	50 - 99	N/A
Miller's Merry Manor	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Oral & Maxillofacial Surgery	Dentists(621210)	Fort Wayne	50 - 99	$5,000 - $9,999
Oral & Maxillofacial Surgery	Dentists(621210)	Fort Wayne	50 - 99	$5,000 - $9,999

Rehabilitation & Work Svc	Rehabilitation Services(624310)	Fort Wayne	50 - 99	$2,500 - $4,999
Riverbend Health Care Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Salvation Army	Social Service & Welfare Organizations(624190)	Fort Wayne	50 - 99	N/A
Score Sba Room 0130	Counseling Services(624110)	Fort Wayne	50 - 99	$2,500 - $4,999
Sunrise of Fort Wayne	Retirement Communities & Homes(623311)	Fort Wayne	50 - 99	$1,000 - $2,499
Sunshine Home Health Care	Home Health Service(621610)	Fort Wayne	50 - 99	$2,500 - $4,999
Turnstone Center For Disabled	Social Service & Welfare Organizations(624190)	Fort Wayne	50 - 99	N/A
University Park Nursing Ctr	Nursing & Convalescent Homes(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Visiting Nurse & Hospice Home	Hospices(623110)	Fort Wayne	50 - 99	$2,500 - $4,999
Ymca	Social Service & Welfare Organizations(624190)	Fort Wayne	50 - 99	N/A
St Joseph Hospital	Hospitals(622110)	Fort Wayne	500 - 999	$50,000 - $99,999
Village of Heritage	Nursing & Convalescent Homes(623110)	Monroeville	50 - 99	$1,000 - $2,499
Harborside Healthcare	Nursing & Convalescent Homes(623110)	New Haven	100 - 249	$5,000 - $9,999
New Horizons Home Health Svc	Home Health Service(621610)	New Haven	50 - 99	$2,500 - $4,999
DEKALB COUNTY				
Betz Nursing Home	Residential Care Homes(623312)	Auburn	100 - 249	$5,000 - $9,999
Oak Meadows Learning Ctr	Mental Retardation & Dev Disabled Svcs(624310)	Auburn	100 - 249	N/A
DE Kalb Memorial Hospital Inc	Hospitals(622110)	Auburn	250 - 499	$20,000 - $49,999
Children First Ctr	Social Service & Welfare Organizations(624190)	Auburn	50 - 99	N/A
Wesley Health Care	Homes-Adult(623312)	Auburn	50 - 99	$2,500 - $4,999
Ymca	Social Service & Welfare Organizations(624190)	Auburn	50 - 99	N/A
Laurels of DE Kalb	Nursing & Convalescent Homes(623110)	Butler	100 - 249	$5,000 - $9,999
Miller's Merry Manor	Nursing & Convalescent Homes(623110)	Garrett	50 - 99	$2,500 - $4,999
Cedars	Nursing & Convalescent Homes(623110)	Leo	50 - 99	$2,500 - $4,999

GRANT COUNTY				
Marion General Hospital	Hospitals(622110)	Marion	1,000 - 4,999	$100,000 - $499,999
Physician Referral Svc	Physicians & Surgeons Information Bureau(621999)	Marion	1,000 - 4,999	$100,000 - $499,999
Carey Services	Social Service & Welfare Organizations(624190)	Marion	100 - 249	N/A
Colonial Oaks Health Care Ctr	Nursing & Convalescent Homes(623110)	Marion	100 - 249	$5,000 - $9,999
Cornerstone Behavioral Health	Mental Health Services(622210)	Marion	100 - 249	$5,000 - $9,999
Family Service Society Inc	Mental Health Services(622210)	Marion	100 - 249	$5,000 - $9,999
Fastrack	Emergency Medical & Surgical Service(622110)	Marion	100 - 249	$10,000 - $19,999
Healthy Families-Grant County	Social Service & Welfare Organizations(624190)	Marion	100 - 249	N/A
Riverbend Learning Ctr	Mental Retardation & Dev Disabled Svcs(624310)	Marion	100 - 249	N/A
Wesley Heights	Retirement Communities & Homes(623311)	Marion	100 - 249	$5,000 - $9,999
Wesleyan Health Care Ctr	Nursing & Convalescent Homes(623110)	Marion	100 - 249	$5,000 - $9,999
Bradner Village Health Care	Nursing & Convalescent Homes(623110)	Marion	50 - 99	$2,500 - $4,999
Center For Sports & Physical	Physical Therapists(621340)	Marion	50 - 99	$2,500 - $4,999
Faithful Friends	Home Health Service(621610)	Gas City	50 - 99	$2,500 - $4,999
Twin City Healthcare	Nursing & Convalescent Homes(623110)	Gas City	50 - 99	$2,500 - $4,999
Marion Family Practice Inc	Physicians & Surgeons(621111)	Marion	50 - 99	$10,000 - $19,999
Northgate Healthcare Ctr	Residential Care Homes(623312)	Marion	50 - 99	$2,500 - $4,999
Work Evaluation & Recovery	Occupational Health & Safety Services(621340)	Marion	50 - 99	$2,500 - $4,999
US Veterans Medical Ctr	Hospitals(622110)	Marion	500 - 999	$50,000 - $99,999
University Nursing Ctr	Nursing & Convalescent Homes(623110)	Upland	50 - 99	$2,500 - $4,999
HUNTINGTON COUNTY				
Ambulance Service	Hospitals(622110)	Huntington	100 - 249	$10,000 - $19,999
Miller's Merry Manor	Convalescent Homes(623110)	Huntington	100 - 249	$5,000 - $9,999

Parkview Huntington Hospital	Hospitals(622110)	Huntington	250 - 499	$20,000 - $49,999
Kids Kampus	Child Care Service(624410)	Huntington	50 - 99	$1,000 - $2,499
Norwood Nursing Ctr	Rehabilitation Services(624310)	Huntington	50 - 99	$2,500 - $4,999
Oakbrook Village	Residential Care Homes(623312)	Huntington	50 - 99	$2,500 - $4,999
LAGRANGE COUNTY				
Association-Retarded Citizens	Mental Retardation & Dev Disabled Svcs(624310)	Howe	100 - 249	N/A
LA Grange Community Hospital	Hospitals(622110)	Lagrange	100 - 249	$10,000 - $19,999
Miller's Merry Manor	Nursing & Convalescent Homes(623110)	Lagrange	100 - 249	$2,500 - $4,999
Life Care Ctr of Lagrange	Nursing & Convalescent Homes(623110)	Lagrange	50 - 99	$2,500 - $4,999
NOBLE COUNTY				
Sacred Heart Home	Nursing & Convalescent Homes(623110)	Avilla	100 - 249	$5,000 - $9,999
Community Hospital of Noble	Hospitals(622110)	Kendallville	100 - 249	$10,000 - $19,999
Parkview Noble Hospital	Hospitals(622110)	Kendallville	250 - 499	$20,000 - $49,999
Kendallville Manor Health Care	Nursing & Convalescent Homes(623110)	Kendallville	50 - 99	$2,500 - $4,999
Northeastern Center	Mental Health Services(622210)	Kendallville	50 - 99	$2,500 - $4,999
Shepherd of the Hill	Nursing & Convalescent Homes(623110)	Kendallville	50 - 99	$2,500 - $4,999
Sheppard of the Hill	Nursing & Convalescent Homes(623110)	Kendallville	50 - 99	$5,000 - $9,999
Ymca Garden	Social Service & Welfare Organizations(624190)	Kendallville	50 - 99	N/A
Avalon Village	Nursing & Convalescent Homes(623110)	Ligonier	50 - 99	$2,500 - $4,999
Community Action-NE Indiana	Social Service & Welfare Organizations(624190)	Rome City	100 - 249	N/A
STEUBEN COUNTY				
Cameron Memorial Hospital	Hospitals(622110)	Angola	100 - 249	$10,000 - $19,999
Cameron Woods	Hospitals(622110)	Angola	100 - 249	$10,000 - $19,999
Breeden Ymca & Learning Ctr	Social Service & Welfare Organizations(624190)	Angola	50 - 99	N/A
Lakeland Nursing Ctr	Nursing & Convalescent Homes(623110)	Angola	50 - 99	$2,500 - $4,999

Northern Lakes Nursing & Rehab	Nursing & Convalescent Homes(623110)	Angola	50 - 99	$2,500 - $4,999
WABASH COUNTY				
Rolling Meadows Healthcare Ctr	Nursing & Convalescent Homes(623110)	LA Fontaine	100 - 249	$5,000 - $9,999
Wabash County Hospital	Hospitals(622110)	North Manchester	250 - 499	$20,000 - $49,999
Wabash Skilled Care Ctr	Nursing & Convalescent Homes(623110)	North Manchester	50 - 99	$2,500 - $4,999
Vernon Manor Home For Children	Nursing & Convalescent Homes(623110)	Wabash	100 - 249	$5,000 - $9,999
Wabash County Hospital	Hospitals(622110)	Wabash	250 - 499	$20,000 - $49,999
Meals on Wheels	Social Service & Welfare Organizations(624190)	Wabash	50 - 99	N/A
Millers Merry Manor	Nursing & Convalescent Homes(623110)	Wabash	50 - 99	$2,500 - $4,999
Miller's Merry Manor	Nursing & Convalescent Homes(623110)	Wabash	50 - 99	$1,000 - $2,499
Wabash-Miami Home Health Care	Home Health Service(621610)	Wabash	50 - 99	$2,500 - $4,999
WELLS COUNTY				
Bluffton Regional Medical Ctr	Hospitals(622110)	Bluffton	100 - 249	$10,000 - $19,999
Christian Care Retirement Comm	Nursing & Convalescent Homes(623110)	Bluffton	100 - 249	$5,000 - $9,999
Wells County Ems Inc	Emergency Medical & Surgical Service(622110)	Bluffton	100 - 249	$10,000 - $19,999
Bi-County Svc Inc	Mental Retardation & Dev Disabled Svcs(624310)	Bluffton	50 - 99	N/A
Meadowvale Health & Rehab Ctr	Nursing & Convalescent Homes(623110)	Bluffton	50 - 99	$2,500 - $4,999
Markle Health Care	Nursing & Convalescent Homes(623110)	Markle	50 - 99	$2,500 - $4,999
Ossian Health Care	Rehabilitation Services(624310)	Ossian	100 - 249	$5,000 - $9,999
WHITLEY COUNTY				
Parkview Memorial Hospital	Hospitals(622110)	Columbia City	100 - 249	$10,000 - $19,999
Whitley Memorial Hospital	Hospitals(622110)	Columbia City	100 - 249	$10,000 - $19,999
Miller's Merry Manor Inc	Nursing & Convalescent Homes(623110)	Columbia City	50 - 99	$2,500 - $4,999
Oaks	Nursing & Convalescent Homes(623110)	Columbia City	50 - 99	$2,500 - $4,999

11.6.2. Worksheet methodology

REGISTERED NURSES: DATA FROM EGR PROJECTIONS								
OCCUPATIONAL TITLE: REGISTERED NURSES								
Occupational ID: 29-1111								
Occupational code: 29111104130								
INDUSTRY CODE	INDUSTRY TITLE	NAICS	EMPLOYMENT, EGR PROJECTION FILE		PROJECTED EMPLOYMENT CHANGE	NIWIB **LOW** PROJECTED **GROWTH**	NIWIB **MIDDLE** PROJECTED **GROWTH**	NIWIB **UPPER** PROJECTED **GROWTH**
			BASE YEAR 2002	PROJ YEAR 2012				
3100000730	Manufacturing	310000	20	20	0	-10	0	0
5200003160	Finance and Insurance	520000	80	60	-20	-10	0	5
5600003600	Administrative and Support and Waste Management and Remediation Services	560000	50	60	10	9	10	35
6100003750	Educational Services	610000	120	160	40	21	40	55
HEALTH CARE AND SOCIAL ASSISTANCE BY DETAILED CATEGORY								
	Ambulatory Health Care Services:					128	296	481
6211004090	Offices of Physicians	621100	680	1,080	400			
6214004120	Outpatient Care Centers	621400	110	130	20			
6216004140	Home Health Care Services	621600	170	210	40			
	Hospitals:							
6220004160	Hospitals	622000	3,240	3,700	460	269	465	748
	Nursing and Residential Care Facilities					72	150	184
6231004320	Nursing Care Facilities	623100	340	450	110			
6232004330	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	623200	30	50	10			
6233004340	Community Care Facilities for the Elderly	623300	100	130	30			
6240004360	Social Assistance	624000	30	50	20	10	20	30
9000004860	Government	900000	280	330	50	50	60	70
TOTAL:			5,310	6,490	1,180			

TOTAL REGISTERED NURSE PROJECTION

PROJECTIONS BASED ON **SLOW*** GROWTH				
	EMPLOYMENT	GROWTH	REPLACEMENT	TOTAL DEMAND
2002	5,310			
2003	5,357			
2004	5,405			
2005	5,453	52	110	162
2006	5,502	53	110	163
2007	5,551	53	110	163
2008	5,600	54	110	164
2009	5,650	55	110	165
2010	5,701	55	110	165
2011	5,752	56	110	166
2012	5,803	56	110	166

PROJECTIONS BASED ON **AVERAGE*** GROWTH				
	EMPLOYMENT	GROWTH	REPLACEMENT	TOTAL
2002	5,310			
2003	5,392			
2004	5,476			
2005	5,561	100	280	380
2006	5,648	102	283	386
2007	5,736	104	287	391
2008	5,825	106	291	397
2009	5,916	108	295	403
2010	6,009	111	299	409
2011	6,103	113	302	415
2012	6,204	115	306	421

PROJECTIONS BASED ON **HIGH*** GROWTH				
	EMPLOYMENT	GROWTH	REPLACEMENT	TOTAL
2002	5,310			
2003	5,434			
2004	5,560			
2005	5,691	100	326	476
2006	5,824	102	333	487
2007	5,961	104	340	499
2008	6,102	106	347	511
2009	6,247	108	355	524

2010	6,395	111	363	536
2011	6,547	113	371	550
2012	6,704	115	379	563

*These projections were calculated as follows:
The 3 year and 10 year annualized employment growth rates in the EGR-3 area for the major NAICS codes (621,622,623) were reviewed and compared with the EGR projected growth, and these formed the boundaries for the low, middle, and upper level projections. There was no regional information indicating new construction of nursing homes, hospitals (with the exception of the Angola Cancer Care), etc. that would cause adjustment of the most recent past history to influence future projections.

The replacement projections were initially based on the replacement numbers suggested in the SSI toolkit, the EGRprojection file. The replacement number suggested by SSI was 110 positions per year. This replacement rate may be on the low side. A survey conducted by the American Nurses Association, indicated that 8 percent of RNs employed in hospitals indicated that they intend to leave direct patient care of nursing entirely.[67] Another survey done by the American Health Care Association researched the vacancy and turnover rates in nursing homes.[68] This report provided state turnover rates, and in Indiana, that rate was 14.7 percent for staff RNs. The report did not address whether these individuals left nursing entirely or entered another field, such as hospital nursing. However, other reports suggest that as many as 30 percent of RNs do not work in nursing, that the average age of nurses is 43-45 and that projected average retirement age of RNs is 50-55. Given these statistics, a projection that puts half of these turnover statistics as leaving the field of nursing would most likely be reasonable. Also, the initial projection of 110 replacement personnel per year seems low. The research from the above Nursing Home study showed high vacancy rates in staff RNs (14.7 percent) and administrative RNs at 8 percent. Turnover rates for Staff RNs were 50 percent. The results of both of these surveys were used to frame the turnover rate projections. The EGR projection formed the low base, and the range of nurses leaving the field as calculated from the 2 studies cited above form the middle and upper projection.

[67] Survey of 76,000 Nurses Probes Elements of Job Satisfaction. Indiana State Nurses Association. Accessed Oct. 2005 at <http://www.indiananurses.org/news/nurse_survey_2005.htm>.
[68] Decker, Frederic et al. "Results of the 2002 AHCA Survey of Nursing Staff Vacancy and Turnover in Nursing Homes," Feb. 2003. Accessed Oct. 2005 at <http://www.ahca.org/research/rpt_vts2002_final.pdf> .

The following table illustrates the replacement numbers used:

REPLACEMENT PROJECTIONS			
	LOWER	MIDDLE	UPPER
2005	110	280	326
2006	110	283	333
2007	110	287	340
2008	110	291	347
2009	110	295	355
2010	110	299	363
2011	110	302	371
2012	110	306	379

Once these numbers were determined, the numbers were distributed to major industries (the three major NAICS classifications-ambulatory care, hospitals, nursing homes) by using the percentage of registered nurses employed in that area. For example, since 61 percent of RNs were employed in hospitals, 61 percent of the projection was assigned to hospitals. For the industries in which RNs were employed on a lesser scale, e.g. Manufacturing, Finance & Insurance, Education, Social Assistance and Government, these industries relied heavily on the projections supplied by the SSI data packet, i.e. the EGR-3 projection file.

Migration was calculated as follows, keeping in mind that this area was woefully over represented in out-migration estimates in the 1990s.[69] Total migration data was collected from the US Census from 2000-2004. This was an average outflow of 1,215 persons per year for EGR-3. Next, this was analyzed from two aspects - either total single adults leaving (e.g. brain drain) or as families leaving, in which case average family size for the State of Indiana was used (2.53 members per family), 2 adults assumed per family, with a slight adjustment for labor participation (70 percent labor participation rate (BLS)), and finally the ratio of registered nurses to total employed (5,330 to 340,411) in the EGR-3 area. Using these assumptions, we have 10.5 workers from families leaving per year, or 19 single adults per year who potentially are RNs.

Supply side data was gathered from telephoning the College or University shown on the supply sheet to ask for graduation numbers of those completing the Associates or Bachelor's degrees in nursing. The Indiana Commission of Higher Education web page was also reviewed for helpful information, but in most cases, the RN programs are private programs. Pass rates for licensing were obtained for most institutions from the Indiana State Board of Nursing, and where region-specific pass rates were not known. A conservative estimate was made based on the average pass rate.

[69] Allen County's Census 2000 population was higher than expected because the migration projections had projected more people leaving the area than actually left.

Questions were also asked regarding whether any nursing programs would be undergoing significant changes in the near future. For example, we learned that Indiana Wesleyan is expanding their nursing program.

We also asked whether associate degreed RNs went on to obtain a bachelor degree (i.e. no net new RN created). In most cases, this is not the case; most bachelor degreed RNs are new RNs. Masters program information, while interesting, was not used in this phase, since no new RNs are generated from Masters' programs.

11.7. CNC-MIMMs – Additional information

11.7.1. Major employers likely to hire CNC-MIMM's

Plastic and Rubber Products (326)
Primary Metal (331)
Fabricated Metal (332)
Machinery Metal (333)
Transportation Equipment (336)

EMPLOYER	INDUSTRY	CITY	Estimated Employment	Estimtated ANNUAL SALES ($1,000's)
ADAMS COUNTY				
Micromatic Textron	Special Industry Machinery Nec (Mfrs)(333319)	Berne	100 - 249	$20,000 - $49,999
Bing-Lear Mfg Group	Automobile Bumpers Guards & Grills-Mfrs(336399)	Berne	250 - 499	$100,000 - $499,999
Key Fasteners Corp	Bolts & Nuts-Manufacturers(332722)	Berne	50 - 99	$10,000 - $19,999
Fleetwood Motor Homes	Motor Homes-Manufacturers(336213)	Decatur	1,000 - 4,999	$100,000 - $499,999
Dolco Packaging CO	Plastics-Foam (Manufacturers)(326150)	Decatur	100 - 249	$20,000 - $49,999
Fleetwood Motor Homes	Motor Homes-Manufacturers(336213)	Decatur	100 - 249	$20,000 - $49,999
Decatur Wire Die Svc Inc	Wire Drawing Equipment (Manufacturers)(333514)	Decatur	50 - 99	$10,000 - $19,999
Thunderbird Products	Boats-Manufacturers(336612)	Decatur	500 - 999	$20,000 - $49,999
Elkhart Products Corp	Rolling Drawing/Extruding-Copper (Mfrs)(331421)	Geneva	100 - 249	$50,000 - $99,999
O & R Precision	Tool & Die Makers(333514)	Geneva	50 - 99	$5,000 - $9,999
Strick Corp	Truck & Bus Bodies (Manufacturers)(336211)	Monroe	250 - 499	$50,000 - $99,999
ALLEN COUNTY				
Amt	Machine Shops(332710)	Fort Wayne	100 - 249	$10,000 - $19,999
Central Fine Pack Inc	Plastics-Products-Finished-Manufacturers(326199)	Fort Wayne	100 - 249	$20,000 - $49,999
Deister Machine CO	Special Industry Machinery Nec (Mfrs)(333319)	Fort Wayne	100 - 249	$10,000 - $19,999
Fill-Rite	Pumps-Manufacturers(333911)	Fort Wayne	100 - 249	$20,000 - $49,999
Foamex	Plastics-Foam (Manufacturers)(326150)	Fort Wayne	100 - 249	$20,000 - $49,999
Fort Wayne Foundry Corp	Foundries-Aluminum Brass Bronze & Etc(331524)	Fort Wayne	100 - 249	$20,000 - $49,999
Fort Wayne Foundry Corp	Castings-Aluminum (Manufacturers)(331524)	Fort Wayne	100 - 249	$50,000 - $99,999

Fort Wayne Foundry Corp	Foundries-Steel(331513)	Fort Wayne	100 - 249	$20,000 - $49,999
Ft Wayne Plastics Inc	Plastics-Mold-Manufacturers(326199)	Fort Wayne	100 - 249	$50,000 - $99,999
Harris Kayot Inc	Boats-Manufacturers(336612)	Fort Wayne	100 - 249	$20,000 - $49,999
Indiana Die Molding Inc	Molds (Manufacturers)(333514)	Fort Wayne	100 - 249	$10,000 - $19,999
J B Tool Die & Engineering Inc	Machine Tools-Manufacturers(333512)	Fort Wayne	100 - 249	$20,000 - $49,999
L H Carbide Corp	Tool & Die Makers(333514)	Fort Wayne	100 - 249	$10,000 - $19,999
Lift-All	Overhead Traveling Cranes Hoists (Mfrs)(333923)	Fort Wayne	100 - 249	$20,000 - $49,999
Manco Products Inc	Motorcycle-Bicycle & Parts (Mfrs)(336991)	Fort Wayne	100 - 249	$20,000 - $49,999
Master Spas	Hot Tubs & Spas-Manufacturers(326191)	Fort Wayne	100 - 249	$10,000 - $19,999
Meyer Stamping & Mfg Inc	Metal Stamping (Manufacturers)(332116)	Fort Wayne	100 - 249	$20,000 - $49,999
National Plastics CO	Plastics & Plastic Products (Mfrs)(326199)	Fort Wayne	100 - 249	$20,000 - $49,999
Ottenweller CO	Steel-Structural (Manufacturers)(332312)	Fort Wayne	100 - 249	$10,000 - $19,999
P D Wire & Cable	Drawing/Insulating-Nonferrous Wire (Mfr)(331491)	Fort Wayne	100 - 249	$20,000 - $49,999
P D Wire & Cable	Rolling Drawing/Extruding-Copper (Mfrs)(331421)	Fort Wayne	100 - 249	$20,000 - $49,999
Ward Aluminum Casting Inc	Castings-Aluminum (Manufacturers)(331524)	Fort Wayne	100 - 249	$20,000 - $49,999
Ward Corp	Machine Shops(332710)	Fort Wayne	100 - 249	$10,000 - $19,999
Wfi Industries Ltd	Geothermal Htg/Cooling Equip/Systs-Mfrs(333414)	Fort Wayne	100 - 249	N/A
Fort Wayne Metals Research	Metal Goods-Manufacturers(332999)	Fort Wayne	250 - 499	$20,000 - $49,999
Fort Wayne Wire Die Inc	Wire Drawing Equipment (Manufacturers)(333514)	Fort Wayne	250 - 499	$20,000 - $49,999
National Tube Form CO	Tube-Bending & Fabricating(332996)	Fort Wayne	250 - 499	N/A
PhD Inc	Cylinders-Air & Hydraulic-Manufacturers(333995)	Fort Wayne	250 - 499	$20,000 - $49,999
Rea Magnet Wire CO Inc	Drawing/Insulating-Nonferrous Wire (Mfr)(331491)	Fort Wayne	250 - 499	$50,000 - $99,999
Terex Advance Mixer Inc	Industrial Trucks Tractors/Trlrs (Mfrs)(333924)	Fort Wayne	250 - 499	$50,000 - $99,999
Trelleborg Seals Div	Plastics & Plastic Products (Mfrs)(326199)	Fort Wayne	250 - 499	$20,000 - $49,999
Acro Custom Rubber	Molded Extruded/Lathe Cut Rbbr Gds (Mfr)(326291)	Fort Wayne	50 - 99	$10,000 - $19,999
Alliance Winding Equipment Inc	Machinery-Specially Designed & Built(333319)	Fort Wayne	50 - 99	$5,000 - $9,999
Amt	Wire-Manufacturers(331222)	Fort Wayne	50 - 99	$10,000 - $19,999
Anixter Pentacon Inc	Bolts Nuts Screws Rivets/Washers (Mfrs)(332722)	Fort Wayne	50 - 99	$10,000 - $19,999
Benteler Tool & Die Inc	Die Makers(333514)	Fort Wayne	50 - 99	$5,000 - $9,999
Creative Coatings Inc	Metal Finishers (Manufacturers)(332813)	Fort Wayne	50 - 99	$5,000 - $9,999
Crown Group	Metal Finishers (Manufacturers)(332813)	Fort Wayne	50 - 99	$5,000 - $9,999
Dirig Sheet Metal Inc	Sheet Metal Fabricators(332322)	Fort Wayne	50 - 99	$10,000 - $19,999
Fort Wayne Anodizing	Anodizing (Manufacturers)(332813)	Fort Wayne	50 - 99	$5,000 - $9,999
Global Tool & Automation Corp	Molds (Manufacturers)(333514)	Fort Wayne	50 - 99	$5,000 - $9,999

Isaac Tire Inc	Tire-Retreading & Repairing(326212)	Fort Wayne	50 - 99	$5,000 - $9,999
Kaiser Tool CO	Machine Tools-Manufacturers(333512)	Fort Wayne	50 - 99	$10,000 - $19,999
Martin Enterprises Inc	Fabricated Structural Metal (Mfrs)(332312)	Fort Wayne	50 - 99	$10,000 - $19,999
Metal Plate Polishing	Metal Finishers (Manufacturers)(332813)	Fort Wayne	50 - 99	$5,000 - $9,999
Midwest Tool & Die Corp	Die Makers(333514)	Fort Wayne	50 - 99	$5,000 - $9,999
Millennium Mold & Engineering	Plastics-Blow Molding (Manufacturers)(326199)	Fort Wayne	50 - 99	$5,000 - $9,999
Parker-Hannifin Corp	Rubber-Mfrs Supplies (Manufacturers)(326299)	Fort Wayne	50 - 99	$10,000 - $19,999
Perfection CO	Aircraft Ground Support & Svc Equip-Mfrs(336413)	Fort Wayne	50 - 99	$10,000 - $19,999
Schust Engineering Inc	Sheet Metal Fabricators(332322)	Fort Wayne	50 - 99	$10,000 - $19,999
Specialty Tool Inc	Machine Tools-Manufacturers(333512)	Fort Wayne	50 - 99	$10,000 - $19,999
St James CO	Windows-Manufacturers(332321)	Fort Wayne	50 - 99	$5,000 - $9,999
Teflow Engineering Inc	Coatings-Protective-Manufacturers(332812)	Fort Wayne	50 - 99	$5,000 - $9,999
Vee Engineering Inc	Truck & Bus Bodies (Manufacturers)(336211)	Fort Wayne	50 - 99	$20,000 - $49,999
Wayne Combustion Systems	Heating Equipment-Manufacturers(333414)	Fort Wayne	50 - 99	$10,000 - $19,999
Wayne Metal Protection CO	Plating (Manufacturers)(332813)	Fort Wayne	50 - 99	$5,000 - $9,999
Essex Group Inc	Drawing/Insulating-Nonferrous Wire (Mfr)(331491)	Fort Wayne	370	N/A
Mullnix Packages Inc	Plastics & Plastic Products (Mfrs)(326199)	Fort Wayne	500 - 999	$20,000 - $49,999
Meridian	Automobile Parts & Supplies-Mfrs(336399)	Grabill	100 - 249	$50,000 - $99,999
Cme Automotive Corp	Automobile Parts & Supplies-Mfrs(336399)	Monroeville	100 - 249	$50,000 - $99,999
Almet Inc	Steel-Structural (Manufacturers)(332312)	New Haven	100 - 249	$10,000 - $19,999
Challenge Tool & Mfg	Machine Shops(332710)	New Haven	100 - 249	$10,000 - $19,999
Tuthill Linkage	Joints-Ball (Manufacturers)(336399)	New Haven	100 - 249	$20,000 - $49,999
Kwik Lok Corp	Plastics & Plastic Products (Mfrs)(326199)	New Haven	50 - 99	$5,000 - $9,999
Luginbill Wire Die CO Inc	Wire Drawing Equipment (Manufacturers)(333514)	New Haven	50 - 99	$5,000 - $9,999
T D & M CO	Machine Shops(332710)	New Haven	50 - 99	$5,000 - $9,999
Parker-Hannifin Corp	Refrigerators/Freezers-Supls/Parts-Mfrs(332214)	New Haven	500 - 999	$100,000 - $499,999
General Motors Corp	Truck-Manufacturers(336120)	Allen County	1,000 - 4,999	$1,000,000+
Uniroyal Goodrich Tire Mfg	Tire-Manufacturers(326211)	Woodburn	1,000 - 4,999	$500,000 - $999,999
DEKALB COUNTY				
Bundy Corp	Automobile Parts & Supplies-Mfrs(336399)	Ashley	250 - 499	$100,000 - $499,999
Auburn Gear Inc	Automobile Parts & Supplies-Mfrs(336399)	Auburn	100 - 249	$20,000 - $49,999
Contech	Nonferrous Die Castings-Ex Alum (Mfrs)(331522)	Auburn	100 - 249	$20,000 - $49,999
Alcoa Automotive	Aluminum Extruded Products (Mfrs)(331316)	Auburn	250 - 499	N/A
Foamex Lp	Plastics-Foam (Manufacturers)(326150)	Auburn	250 - 499	$50,000 - $99,999

Rieke Packaging Systems	Plastics & Plastic Products (Mfrs)(326199)	Auburn	250 - 499	N/A
Tower Automotive	Metal Stamping (Manufacturers)(332116)	Auburn	250 - 499	$50,000 - $99,999
Air-Way Mfg	Hydraulic Equipment-Manufacturers(333611)	Auburn	50 - 99	$20,000 - $49,999
Metal Technologies Inc	Foundries-Steel(331513)	Auburn	50 - 99	$5,000 - $9,999
Cooper-Standard Automotive	Automobile Parts & Supplies-Mfrs(336399)	Auburn	500 - 999	$100,000 - $499,999
Bluffton Agri/Ind Corp	Farm Equipment-Manufacturers(333111)	Bluffton	50 - 99	$5,000 - $9,999
Heidtman Steel Products Inc	Steel-Structural (Manufacturers)(332312)	Butler	100 - 249	$20,000 - $49,999
Citation Corp	Castings-Ferrous Metals (Manufacturers)(331513)	Butler	250 - 499	$20,000 - $49,999
Dura Automotive Systems Inc	Automobile Parts & Supplies-Mfrs(336399)	Butler	250 - 499	$100,000 - $499,999
New Millennium Building Systs	Steel-Structural (Manufacturers)(332312)	Butler	250 - 499	N/A
Therma-Tru	Metal Doors Sash Frames & Trim (Mfrs)(332321)	Butler	250 - 499	$20,000 - $49,999
DE Kalb Molded Plastics	Plastics-Mold-Manufacturers(326199)	Butler	50 - 99	$5,000 - $9,999
New Process Steel	Steel-Structural (Manufacturers)(332312)	Butler	50 - 99	$10,000 - $19,999
Steel Dynamics Inc	Steel Mills(331111)	Butler	500 - 999	$100,000 - $499,999
Electric Motors & Specialties	Fans-Industrial & Commercial-Mfrs(333412)	Garrett	100 - 249	$10,000 - $19,999
Griffith Rubber Mills	Molded Extruded/Lathe Cut Rbbr Gds (Mfr)(326291)	Garrett	50 - 99	$5,000 - $9,999
Mossberg Industries Inc	Plastics & Plastic Products (Mfrs)(326199)	Garrett	50 - 99	$10,000 - $19,999
Nucor Fastener	Bolts Nuts Screws Rivets/Washers (Mfrs)(332722)	Saint Joe	100 - 249	$20,000 - $49,999
Vulcraft Sales Corp	Steel-Structural (Manufacturers)(332312)	Saint Joe	250 - 499	$50,000 - $99,999
Charleston Metal Products Inc	Screw Machine Products (Manufacturers)(332721)	Waterloo	100 - 249	$10,000 - $19,999
Nucor Building Systems	Buildings-Metal-Manufacturers(332311)	Waterloo	250 - 499	$50,000 - $99,999
Air-Way Manufacturing CO	Valves & Pipe Fittings Nec (Mfrs)(332919)	Waterloo	50 - 99	$10,000 - $19,999
GRANT COUNTY				
S & S Fire Equipment	Fire Protection Equipment & Supls-Mfrs(333999)	Fairmount	50 - 99	$10,000 - $19,999
Dana Torque-Traction Mfg Techs	Automobile Parts & Supplies-Mfrs(336399)	Marion	65	$100,000 - $499,999
General Motors Corp	Automobile Body-Manufacturers(336111)	Marion	1,000 - 4,999	$1,000,000+
Atlas Foundry CO	Gray & Ductile Iron Foundries(331511)	Marion	100 - 249	$10,000 - $19,999
Bicc Ind Cable CO	Fabricated Wire Products-Misc (Mfrs)(332618)	Marion	100 - 249	$10,000 - $19,999
Wiley Metal Fabricating Inc	Primary Metal Products Nec (Mfrs)(331111)	Marion	100 - 249	$20,000 - $49,999
Amcast Automotive	Automobile Wheel-Manufacturers(336399)	Marion	250 - 499	$50,000 - $99,999
Bahr Brothers Mfg Inc	Foundries-Steel(331513)	Marion	50 - 99	$10,000 - $19,999
Mary & Glass Equipment	Glass Making & Working Machinery (Mfrs)(333298)	Marion	50 - 99	$10,000 - $19,999
Tulox Plastics Corp	Plastics-Extruders (Manufacturers)(326199)	Marion	50 - 99	$1,000 - $2,499

Pierce CO	Fuel Injection Equipment & Service-Mfrs(336322)	Upland	100 - 249	$10,000 - $19,999
	HUNTINGTON COUNTY			
Dana Corp	Screw Machine Products (Manufacturers)(332721)	Andrews	100 - 249	$10,000 - $19,999
Imco Inc	Molded Extruded/Lathe Cut Rbbr Gds (Mfr)(326291)	Huntington	100 - 249	$20,000 - $49,999
Ken Koat Inc	Coatings-Protective-Manufacturers(332812)	Huntington	100 - 249	$20,000 - $49,999
M & S Ind Metal Fabricators	Steel-Structural (Manufacturers)(332312)	Huntington	100 - 249	$20,000 - $49,999
Bendix Commercial Vehicle Sys	Truck Equipment & Parts-Manufacturers(336399)	Huntington	250 - 499	$100,000 - $499,999
Hayes Lemmerz Intl Inc	Automobile Parts & Supplies-Mfrs(336399)	Huntington	250 - 499	$100,000 - $499,999
General Aluminum Mfg CO	Aluminum Die Castings (Manufacturers)(331521)	Huntington	50 - 99	$10,000 - $19,999
Huntington Sheet Metal	Sheet Metal Fabricators(332322)	Huntington	50 - 99	$5,000 - $9,999
Lime City Mfg CO	Metal Stamping (Manufacturers)(332116)	Huntington	50 - 99	$5,000 - $9,999
PhD CO	Cylinders-Air & Hydraulic-Manufacturers(333995)	Huntington	50 - 99	$10,000 - $19,999
Pulley-Kellam CO	Sheet Metal Fabricators(332322)	Huntington	50 - 99	$5,000 - $9,999
Shuttleworth Inc	Conveyors & Conveying Equipment-Mfrs(333922)	Huntington	50 - 99	$10,000 - $19,999
	LAGRANGE COUNTY			
Multi-Plex Inc	Metal Stamping (Manufacturers)(332116)	Howe	250 - 499	$20,000 - $49,999
Indiana Custom Trucks Inc	Truck Sleepers-Manufacturers(336211)	Lagrange	50 - 99	$20,000 - $49,999
K-Z Inc	Trailers-Camping & Travel-Manufacturers(336214)	Shipshewana	250 - 499	$20,000 - $49,999
Lake Park Industries-Indiana	Automotive Stampings (Manufacturers)(336370)	Shipshewana	250 - 499	N/A
Nishikawa Standard CO	Rubber-Mfrs Supplies (Manufacturers)(326299)	Topeka	250 - 499	N/A
Starcraft Marine Llc	Boats-Manufacturers(336612)	Topeka	250 - 499	$50,000 - $99,999
Starcraft Rv Inc	Trailer-Manufacturers & Designers(336214)	Topeka	250 - 499	$20,000 - $49,999
Crossroads Rv Inc	Recreational Vehicles & Campers-Mfrs(336112)	Topeka	50 - 99	N/A
Honeyville Metal	Metal Goods-Manufacturers(332999)	Topeka	50 - 99	$5,000 - $9,999
	NOBLECOUNTY			
Citation Corp	Grinding-Precision & Production(332812)	Albion	100 - 249	$10,000 - $19,999
Parker-Hannifin Corp	Forgings (Manufacturers)(332111)	Albion	100 - 249	$20,000 - $49,999
Robert Bosch Corp	Engines-Supplies-Equipment & Parts-Mfrs(336399)	Albion	250 - 499	$50,000 - $99,999
Bargman CO	Recreational Vehicles-Equip, Parts-Mfrs(336999)	Albion	50 - 99	N/A
Newell Industrial Corp	Plastics-Extruders (Manufacturers)(326199)	Albion	50 - 99	$5,000 - $9,999
Dexter Axle	Axles-Manufacturers(336399)	Albion	500 - 999	$100,000 - $499,999
Federal-Mogul	Plastics-Mold-Manufacturers(326199)	Avilla	100 - 249	$5,000 - $9,999
J O Mory Inc	Sheet Metal Fabricators(332322)	Avilla	100 - 249	$10,000 - $19,999
Victor Reinz	Rubber-Mfrs Supplies (Manufacturers)(326299)	Avilla	100 - 249	$20,000 - $49,999

Indiana Phoenix Inc	Truck-Manufacturers(336120)	Avilla	50 - 99	$50,000 - $99,999
Pent Plastics	Plastics & Plastic Products (Mfrs)(326199)	Avilla	50 - 99	$5,000 - $9,999
Prince Manufacturing	Metals-Pre-Coated (Manufacturers)(332812)	Avilla	50 - 99	$10,000 - $19,999
Bollhoff Rivnut Inc	Bolts Nuts Screws Rivets/Washers (Mfrs)(332722)	Kendallville	100 - 249	$20,000 - $49,999
Dow Corning Corp	Rubber-Mfrs Supplies (Manufacturers)(326299)	Kendallville	100 - 249	$20,000 - $49,999
Essex Group Inc	Drawing/Insulating-Nonferrous Wire (Mfr)(331491)	Kendallville	100 - 249	$20,000 - $49,999
Flint & Walling Industries Inc	Pumps & Pumping Equipment (Mfrs)(333911)	Kendallville	100 - 249	N/A
Hendrickson Suspension	Automobile Parts & Supplies-Mfrs(336399)	Kendallville	100 - 249	$50,000 - $99,999
Reliable Tool & Machine CO	Axles-Manufacturers(336399)	Kendallville	100 - 249	$10,000 - $19,999
Plastech	Plastics & Plastic Products (Mfrs)(326199)	Kendallville	250 - 499	$20,000 - $49,999
Tower Automotive	Metal Stamping (Manufacturers)(332116)	Kendallville	250 - 499	$50,000 - $99,999
A-1 Production Inc	Machine Shops(332710)	Kendallville	50 - 99	$5,000 - $9,999
Group Dekko Intl Inc	Automobile Parts & Supplies-Mfrs(336399)	Kendallville	50 - 99	$10,000 - $19,999
Mahoney Foundries Inc	Foundries-Aluminum Brass Bronze & Etc(331524)	Kendallville	50 - 99	$5,000 - $9,999
No-Sag Spring	Springs-Manufacturers(332612)	Kendallville	50 - 99	$10,000 - $19,999
Quick Tanks Inc	Tanks-Manufacturers(332420)	Kendallville	50 - 99	$10,000 - $19,999
Dalton Corp	Gray & Ductile Iron Foundries(331511)	Kendallville	500 - 999	$20,000 - $49,999
Wayne Manufacturing Corp	Metal Stamping (Manufacturers)(332116)	Laotto	50 - 99	$10,000 - $19,999
X Y Tool & Die	Machinery-Specially Designed & Built(333319)	Laotto	50 - 99	$5,000 - $9,999
Acadia	Automobile Parts & Supplies-Mfrs(336399)	Ligonier	100 - 249	$20,000 - $49,999
Jeld-Wen Windows & Doors	Doors-Metal-Manufacturers(332321)	Ligonier	100 - 249	$20,000 - $49,999
Millennium Industries	Automobile Parts & Supplies-Mfrs(336399)	Ligonier	250 - 499	$50,000 - $99,999
Tenneco Automotive	Automobile Parts & Supplies-Mfrs(336399)	Ligonier	250 - 499	$50,000 - $99,999
Western Consolidated	Plastics-Products-Finished-Manufacturers(326199)	Ligonier	50 - 99	$5,000 - $9,999
Silgan Plastics Corp	Plastic Bottles (Manufacturers)(326160)	Ligonier	500 - 999	$100,000 - $499,999
B & J Specialty Inc	Special Dies/Tools Fxtrs/Ind Molds (Mfr)(333514)	Wawaka	50 - 99	$5,000 - $9,999
Wolf Lake Products Inc	Air Conditioning/Htg/Refrig Equip (Mfrs)(333415)	Wolflake	50 - 99	$10,000 - $19,999
STEUBEN COUNTY				
Angola Wire Products	Fabricated Wire Products-Misc (Mfrs)(332618)	Angola	100 - 249	$10,000 - $19,999
General Products	Forgings (Manufacturers)(332111)	Angola	100 - 249	$20,000 - $49,999
Meridian Automotive Systems	Automobile Parts & Supplies-Mfrs(336399)	Angola	100 - 249	$50,000 - $99,999
T & S Equipment Corp	Material Handling Equipment-Mfrs(333924)	Angola	100 - 249	$2,500 - $4,999
Tyden Brammall Inc	Hardware-Manufacturers(332510)	Angola	100 - 249	$10,000 - $19,999
Vestil Manufacturing Corp	Material Handling Equipment-Mfrs(333924)	Angola	100 - 249	$50,000 - $99,999

T & S Equipment CO	Material Handling Equipment-Mfrs(333924)	Angola	250 - 499	$50,000 - $99,999
Datec Industries CO	Automobile Parts & Supplies-Mfrs(336399)	Angola	50 - 99	$10,000 - $19,999
Indiana Marine Products	Fabricated Wire Products-Misc (Mfrs)(332618)	Angola	50 - 99	$10,000 - $19,999
Metal Spinners Inc	Metal Spinning (Manufacturers)(332116)	Angola	50 - 99	$10,000 - $19,999
Trans Guard Inc	Metal Goods-Manufacturers(332999)	Angola	50 - 99	$10,000 - $19,999
Allegheny Coatings	Coatings-Protective-Manufacturers(332812)	Fremont	100 - 249	$20,000 - $49,999
Autoform Tool & Mfg	Machine Shops(332710)	Fremont	100 - 249	$10,000 - $19,999
Dexter Axle	Axles-Manufacturers(336399)	Fremont	100 - 249	$50,000 - $99,999
General Aluminum Mfg CO	Aluminum Die Castings (Manufacturers)(331521)	Fremont	100 - 249	$20,000 - $49,999
Letica Corp	Plastics & Plastic Products (Mfrs)(326199)	Fremont	100 - 249	$10,000 - $19,999
Amcast Automotive Inc	Foundries-Aluminum Brass Bronze & Etc(331524)	Fremont	250 - 499	$20,000 - $49,999
Electromate Inc	Sheet Metal Fabricators(332322)	Fremont	50 - 99	$10,000 - $19,999
Wenzel Metal Spinning Inc	Metal Spinning (Manufacturers)(332116)	Fremont	50 - 99	$5,000 - $9,999
Eagle Picher Hillsdale Tool	Automobile Parts & Supplies-Mfrs(336399)	Hamilton	100 - 249	$50,000 - $99,999
Halex CO	Tool & Die Makers(333514)	Hamilton	50 - 99	$10,000 - $19,999
Pittsfield Indiana	Filtering Materials & Supplies (Mfrs)(333999)	Hamilton	50 - 99	$10,000 - $19,999
Hudson Industries Inc	Metal Stamping (Manufacturers)(332116)	Hudson	100 - 249	N/A
Madsen Wire Products	Fabricated Wire Products-Misc (Mfrs)(332618)	Orland	50 - 99	$10,000 - $19,999
Orland Machine Products	Cylinder Heads-Manufacturers(336340)	Orland	50 - 99	$20,000 - $49,999
WABASH COUNTY				
Machester Metals Llc	Foundries-Steel(331513)	North Manchester	100 - 249	$10,000 - $19,999
Bkb Mfg Inc	Compressors-Manufacturers(333912)	North Manchester	50 - 99	$10,000 - $19,999
Manchester Tool & Die Inc	Machine Shops(332710)	North Manchester	50 - 99	$2,500 - $4,999
Cyclone Manufacturing CO	Fertilizing Equipment-Manufacturers(333111)	Urbana	50 - 99	$10,000 - $19,999
Martin Yale Industries Inc	Office Machines Nec (Manufacturers)(333313)	Wabash	100 - 249	N/A
Hayes Lemmerz Intl Inc	Castings(331528)	Wabash	250 - 499	$20,000 - $49,999
Wabash Alloys	Secondary Smelting & Refining-Nonferrous(331492)	Wabash	250 - 499	N/A
AL-Fe Heat Treating Inc	Heat Treating Metal (Manufacturers)(332811)	Wabash	50 - 99	$10,000 - $19,999
Diehl Machines Inc	Woodworking Machinery (Manufacturers)(333210)	Wabash	50 - 99	$5,000 - $9,999
Ford Meter Box CO Inc	Water Works Equipment & Supplies-Mfrs(333319)	Wabash	500 - 999	$100,000 - $499,999
Gdx Automotive	Rubber-Mfrs Supplies (Manufacturers)(326299)	Wabash	500 - 999	$100,000 - $499,999
WELLS COUNTY				
Almco Steel Products Corp	Metal Stamping (Manufacturers)(332116)	Bluffton	100 - 249	$10,000 - $19,999
Buckhorn Inc	Plastics-Mold-Manufacturers(326199)	Bluffton	100 - 249	$20,000 - $49,999

Metaldyne Transmission & Prgrm	Engines-Supplies-Equipment & Parts-Mfrs(336399)	Bluffton	100 - 249	$50,000 - $99,999
T I Group Automotive Systems	Automobile Parts & Supplies-Mfrs(336399)	Ossian	250 - 499	$50,000 - $99,999
Hower Tool Div	Cutting Tools/Acces/Measuring Dvcs (Mfr)(333515)	Ossian	50 - 99	$5,000 - $9,999
Roembke Manufacturing & Dsn	Machine Shops(332710)	Ossian	50 - 99	$5,000 - $9,999
WHITLEY COUNTY				
C&A TOOL	Machine Shops(332710) and Design (541)	Churubusco	250 - 499	$20,000 - $49,999
Dana Corp	Automobile Parts & Supplies-Mfrs(336399)	Churubusco	170	$100,000 - $499,999
Brc Rubber Group	Molded Extruded/Lathe Cut Rbbr Gds (Mfr)(326291)	Churubusco	100 - 249	$50,000 - $99,999
Cuno Water Treatment Corp	Filtering Materials & Supplies (Mfrs)(333999)	Churubusco	50 - 99	N/A
Kilgore Manufacturing CO	Machine Shops(332710)	Columbia City	100 - 249	$10,000 - $19,999
Precision Plastics	Plastics-Mold-Manufacturers(326199)	Columbia City	100 - 249	$20,000 - $49,999
Reelcraft Industries Inc	Reels (Manufacturers)(332999)	Columbia City	100 - 249	$10,000 - $19,999
Dana Corp	Automobile Parts & Supplies-Mfrs(336399)	Columbia City	250 - 499	$100,000 - $499,999
Fort Wayne Foundry Corp	Foundries-Aluminum Brass Bronze & Etc(331524)	Columbia City	250 - 499	$50,000 - $99,999
Steel Dynamics Inc	Steel-Structural (Manufacturers)(332312)	Columbia City	250 - 499	$50,000 - $99,999
C & R Plating Corp	Plating (Manufacturers)(332813)	Columbia City	50 - 99	N/A

11.7.2 Worksheet methodology

In section 7.2.2, the NIWIB survey was identified as a key component in estimating the demand for the CNC-MIMM position. With at least 227 "major" employers (using the InfoUSA data above), it may not be unreasonable to assume that perhaps 88 percent, i.e. the same percentage of those responding to the NIWIB survey as needing at least one CNC-MIMM employee, of these major 227 businesses would hire at least ONE new CNC-MIMM position today.

We also have information from a local educator/businessperson who states that "we are collectively supplying only about 30 percent of the qualified workers that could be retained by regional manufacturers with these needs." Given this, the current demand was developed from knowing approximately what the supply line is.

There are a minimal number of students graduating with an associate's degree in various IVY Tech programs (both Fort Wayne and Marion/Muncie) that could conceivably develop into a CNC-MIMM, and there are other local sources which may contribute to the supply chain (Anthis Career Center, Vantage Vocational in Ohio). The graduates or certificate awardees in these programs are most likely supplying 30 percent of today's needs. This equates to a current local need of approximately 150 CNC-MIMMs at a minimum. This forms our lower projection. We are concerned about retirements in this area, which are going to increase at a faster pace in the next few

years. The new CNC-MIMM job necessary to compete in today's advanced manufacturing is not always entirely equal to the skill set of those retiring, and that the CNC-MIMM may possess the skills necessary to replace more than one employee, so a growth in employment in the major subsectors will not necessarily be seen in the near future.

We also have the SSI-EGR3 projections, and comparison of these numbers to our "calculated" demand number above is indeed similar. After a slight adjustment is made to the SSI-EGR3 projections to remove the non-production general maintenance and repair workers from the suggested growth and replacement projections to get a usable CNC-MIMM projection, we have a projected total *growth* of 59 positions per year, and annual openings due to *replacements* of 153. This formed the basis for our middle projection. The higher projection is dependent on the economy and the capacity of current plants to upgrade their machinery to the state-of-the-art equipment now available.

Note that there are two relatively new programs that will introduce students to the CNC-MIMM type of job. These have been included in the supply worksheet as Freedom Academy, a non-for-profit institution in Noble County that will offer a six week introduction to CNC-MIMM. Students will need to work in an appropriate setting for 2-4 years before they are at the skill level desired. IVY Tech also has an entry-level, 75-hour certificate program, also expecting that an apprenticeship will be required after this program is finished.

The current demand for the experienced, tech-savvy CNC-MIMM employee is in the subsector Primary Metals, but demand for the worksheet calculation was simply done by taking the percentage of major employers in each subsector and allocating demand by that same percentage. For example, primary metal major employers represent 12.6 percent of the 227 major employers, and thus 12.6 percent of the total demand of 150 (for the lower projection) was "assigned" to Primary Metals. The other percentages are as follows: 15 percent Plastic and Rubber; 31.3 percent Fabricated Metal, 19.1 percent Machinery Manufacturing, and 21.7 percent Transportation Equipment. Since the CNC-MIMM position will encompass and absorb other current positions, to allocate the demand by the number of current employees in that field did not seem justified.

Migration was calculated in much the same way the Registered Nurses were calculated. The total net-migration for the EGR3 area was calculated, annualized, and then this number was viewed as if the total out-migration was composed of single person households or families. The percentage of CNC-MIMM employees to total employees in the EGR3 area was calculated to get the effect of this CNC-MIMM net migration.

11.8. Industrial Engineers – Additional Information

11.8.1. Major employers likely to hire industrial engineers

Major Employers of Industries for which Industrial Engineering Jobs Tend To Be Concentrated

Major Three Digit NAICS Codes
Plastics and Rubber Products Manufacturing (#326)
Primary Metal Manufacturing (#331)
Fabricated Metal Product Manufacturing (#332)
Machinery Manufacturing (#333)
Computer and Electronic Product Manufacturing (#334)
Electrical Equipment, Appliance, and Component Manufacturing (#335)
Transportation Equipment Manufacturing (#336)
Miscellaneous Manufacturing (#339)

More than 250 employees

EMPLOYER	INDUSTRY	CITY	ESTIMATED EMPLOYMENT
ADAMS COUNTY			
Bing-Lear Mfg. Group	Automotive Bumpers Guards	Berne	250-499
	#336399		
Fleetwood Motor Homes	Motor Homes Mfg.	Decatur	1,000-4,999
	#336213		
Thunderbird Products	Boats Mfg.	Decatur	500-999
	#336612		
Strick Corp	Truck & Bus Bodies	Monroe	250-499
	#336211		
ALLEN COUNTY			
Dana Corp	Axles Mfg.	Fort Wayne	500-999
	#336399		
Fort Wayne Metals Research	Metal Goods Mfg	Fort Wayne	250-499
	#332999		
Fort Wayne Wire Die Inc.	Wire Drawing Equipment Mfg	Fort Wayne	250-499
	#333514		
General Motors Corp	Automotive Body Mfg.	Roanoke	1,000-4,999
	#336120		
ITT Industries	Manufacturers	Fort Wayne	1,000-4,999
	#339999		
National Tube Form Co.	Tube Bending & Fabricating	Fort Wayne	250-499
	#332996		
Parker Hannifin Corp	Refrigerators/Freezers Parts Mfg.	New Haven	500-1,000

	#33214		
PhD Inc	Cylinders Air & Hydraulic Mfg.	Fort Wayne	250-499
Raytheon Company	Computers-Electronic MFG	Fort Wayne	1,000-4,999
	#334111		
REA Magnet Wire Co.	Drawing/Insulating Wore	Fort Wayne	250-499
	#331491		
Terex Advance Mixer	Industrial Trucks Mfg.	Fort Wayne	250-499
	#333924		
DEKALB COUNTY			
Cooper-Standard Automotive	Automotive Parts & Supplies Mfg	Auburn	500-999
	#336399		
Dura Automotive Systems	Automotive Parts & Supplies Mfg	Butler	250-499
	#336399		
New Millennium Building Sys.	Steel Structures Mfg.	Butler	250-499
	#332312		
Nucor Building Systems	Buildings Metal Mfg.	Waterloo	250-499
	#332311		
Steel Dynamics	Steel Mills	Butler	500-999
	#331111		
Therma-Tru	Metal Doors Sash Frames MFG	Butler	250-499
	#332321		
Vulcraft Sales Corp.	Steel Structures Mfg	Saint Joe	250-499
	#332312		
GRANT COUNTY			
Amcast Automotive	Automobile Wheel Mfg	Marion	250-499
	#336399		
Dana Torque-Traction	Automotive Parts & Supplies Mfg	Marion	250-499
	#336399		
General Motors Corp.	Automotive Body Mfg.	Marion	1,000-4,999
	#336120		
HUNTINGTON COUNTY			
Bendix Commercial Vehicle Sys	Truck Equip. Parts	Huntington	250-499
	#336399		
Hayes Lemmerz Intl.	Automotive Parts & Supplies Mfg	Huntington	250-499
	#336399		
United Technologies Electronic	Electronic Equip. Supplies Mfg	Huntington	500-999
	#334419		
Wabash Technologies	Electronic Equip. Supplies Mfg	Huntington	500-999
	#334419		
LAGRANGE COUNTY			
K-Z Inc.	Trailers- Camping Mfg	Shipshewana	250-499
	#336214		
Lake Park Industries	Automotive Stamping	Shipshewana	250-499
	#336370		
Millennium Industries	Automotive Parts & Supplies Mfg	Ligonier	250-499
	#336399		

Multi-Plex Inc	Metal Stamping Mfg	Howe	250-499
	#332116		
Starcraft Marine LLC	Boats Mfg	Topeka	250-499
	#336612		
Starcraft RV Inc.	Trailer Mfgs & Designers	Topeka	250-499
	#336214		
Tenneco Automotive	Automotive Parts & Supplies Mfg	Ligonier	250-499
	#336399		
NOBLE COUNTY			
Dexter Axle	Axles Mfg.	Albion	500-999
Robert Bosch Corp	Engines-Supplies-Equipment	Albion	250-499
	#336612		
STEUBEN COUNTY			
Bundy Corp	Automotive Parts & Supplies Mfg	Ashley	250-499
	#336399		
Dana Hose & Tubing	Fuel Injection Equipment	Angola	250-499
	#336322		
T & S Equipment	Material Handling Equipment Mfg	Angola	250-499
WABASH COUNTY			
Escalade, Inc.	Sporting & Athletic Goods Nec	Wabash	250-499
	#339920		
Ford Meter Box Co.	Water Works Equip. Mfg	Wabash	500-1,000
	#333319		
WELLS COUNTY			
Franklin Electric Company	Electric Motors Mfg.	Bluffton	500-999
	#335312		
TI Group Automotive Systems	Automotive Parts & Supplies Mfg	Ossian	250-499
	#336399		
Johnson Controls Inc	Controls & Control Systems	Ossian	250-499
	#334512		
WHITLEY COUNTY			
Dana Corp	Automotive Parts & Supplies Mfg	Churubusco	250-499
	#336399		
Dana Corp	Automotive Parts & Supplies Mfg	Columbia City	250-499
	#336399		
Steel Dynamics Inc	Steel Structures Mfg	Columbia City	250-499
	#332312		

11.8.2. Worksheet methodology

All information about the methodology in assembling the Supply, Demand and Net Demand worksheets is contained in Section 7.3.2.

11.9. Computer Systems Analysts – Additional Information

11.9.1. Major employers likely to hire computer systems analysts

Computer and Electronics Products Manufacturing (NAICS # 334)
Miscellaneous Manufacturing (NAICS # 339)
Electrical Equipment Appliance and Component Manufacturing (NAICS # 335)
Insurance Carriers (NAICS # 524)
Professional, Scientific and Technical Services (NAICS # 541)
Hospitals (NAICS # 622)
Merchant Wholesalers Durable Goods (NAICS # 423)
Employers with more than 20 employees are listed.

Employer Name	Industry (NAICS)	City	Employer Size	Annual Sales ($1,000's)
ADAMS COUNTY				
Adams County Memorial Hospital	Hospitals(622110)	Decatur	250 - 499	$20,000 - $49,999
Adm Alliance Nutrition	Laboratories-Research & Development(541710)	Decatur	20 - 49	$2,500 - $4,999
Berne Medical Ctr	Hospitals(622110)	Berne	100 - 249	$10,000 - $19,999
Berne Tube Products	Tubing-Metal (Wholesale)(423510)	Berne	50 - 99	$50,000 - $99,999
Cts Corporation-Resistor	Electric Equipment & Supplies-Wholesale(423610)	Berne	250 - 499	$100,000 - $499,999
Fleetwood American Coach Svc	Recreational Vehicles-Wholesale(423110)	Decatur	100 - 249	$100,000 - $499,999
Gold Shield Fiber Glass Inc	Fiber Glass Products (Wholesale)(423840)	Decatur	250 - 499	$100,000 - $499,999
Grinnell Fire Protection	Sprinklers-Automatic-Fire (Wholesale)(423850)	Monroe	20 - 49	$10,000 - $19,999
House of White Birches	Marketing Programs & Services(541613)	Berne	50 - 99	$5,000 - $9,999
Resistor Networks	Marketing Programs & Services(541613)	Berne	500 - 999	$100,000 - $499,999
Ring-R Engineering Inc	Manufacturers(339999)	Decatur	20 - 49	$2,500 - $4,999
ALLEN COUNTY				
A & L Great Lakes Labs Inc	Laboratories-Testing(541380)	Fort Wayne	20 - 49	$2,500 - $4,999
Acordia Inc	Insurance(524210)	Fort Wayne	50 - 99	$5,000 - $9,999
Adt Security Svc	Security Control Equip & Systems-Mfrs(334290)	Fort Wayne	20 - 49	$5,000 - $9,999
All Rite Distributing CO	Automobile Parts & Supplies-Wholesale(423120)	Fort Wayne	20 - 49	$10,000 - $19,999

Allen Business Machines CO	Copying & Duplicating Machines & Supls(423420)	Fort Wayne	20 - 49	N/A
Allen Dental Laboratory Inc	Laboratories-Dental(339116)	Fort Wayne	20 - 49	$1,000 - $2,499
All-Phase Electric Supply CO	Electric Equipment & Supplies-Wholesale(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Alro Steel Corp	Steel-Distributors & Warehouses(423510)	Fort Wayne	20 - 49	$20,000 - $49,999
American Steel Investment	Accounting & Bookkeeping General Svc(541219)	Fort Wayne	20 - 49	$1,000 - $2,499
Aon Service Ctr	Insurance(524210)	Fort Wayne	100 - 249	$10,000 - $19,999
Apollo Design Technology	Electric Lamp Bulbs & Tubes-Mfrs(335110)	Fort Wayne	50 - 99	$10,000 - $19,999
Apr Plastic Fabricating Inc	Tanks-Fiber, Glass, Plastic, Etc (Whol)(423860)	Fort Wayne	20 - 49	$10,000 - $19,999
Ash Brokerage Corp	Insurance(524210)	Fort Wayne	50 - 99	$10,000 - $19,999
Asher Agency Inc	Advertising-Agencies & Counselors(541810)	Fort Wayne	20 - 49	$2,500 - $4,999
Asphalt Equipment CO Inc	Miscellaneous Industrial Supplies (Whol)(423840)	Fort Wayne	20 - 49	$10,000 - $19,999
Athena Technology Inc	Physicians & Surgeons Equip & Supls-Mfrs(339112)	Fort Wayne	20 - 49	N/A
Baden Gage & Schroeder	Accountants(541211)	Fort Wayne	100 - 249	$10,000 - $19,999
Bair CPA Group	Accountants(541211)	Fort Wayne	20 - 49	$2,500 - $4,999
Baker & Daniels	Attorneys(541110)	Fort Wayne	100 - 249	$10,000 - $19,999
Barnes & Thornburg	Attorneys(541110)	Fort Wayne	50 - 99	$10,000 - $19,999
Barrett & Mc Nagny	Attorneys(541110)	Fort Wayne	50 - 99	$10,000 - $19,999
Beckman Lawson	Attorneys(541110)	Fort Wayne	50 - 99	$10,000 - $19,999
Beers Mallers Backs & Salin	Attorneys(541110)	Fort Wayne	50 - 99	$5,000 - $9,999
Bentz Transport Products	Truck Bodies & Equipment (Wholesale)(423110)	Fort Wayne	20 - 49	$50,000 - $99,999
Bkd	Accountants(541211)	Fort Wayne	50 - 99	$5,000 - $9,999
Blackburn & Green	Attorneys(541110)	Fort Wayne	20 - 49	$2,500 - $4,999
Blume Connelly Jordan Stucky	Attorneys(541110)	Fort Wayne	20 - 49	$2,500 - $4,999
Bohl Crane Inc	Cranes & Derricks (Wholesale)(423830)	Fort Wayne	20 - 49	$10,000 - $19,999
Bohl Equipment CO	Material Handling Equipment (Wholesale)(423830)	Fort Wayne	20 - 49	$10,000 - $19,999
Bonar Group	Engineers-Civil(541330)	Fort Wayne	50 - 99	$5,000 - $9,999

Briljent	Training Consultants(541612)	Fort Wayne	20 - 49	$5,000 - $9,999
Brink's Home Security Inc	Security Control Equip & Systems-Whol(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Burkhart Advertising Inc	Advertising-Outdoor(541850)	Fort Wayne	20 - 49	$5,000 - $9,999
Burt Blee Dixon Sutton & Bloom	Attorneys(541110)	Fort Wayne	20 - 49	$5,000 - $9,999
Care Inc	Recycling Centers (Wholesale)(423930)	Fort Wayne	20 - 49	$10,000 - $19,999
Cirrus Logic Inc	Semiconductor Devices (Manufacturers)(334413)	Fort Wayne	20 - 49	$10,000 - $19,999
Clark Fabrication	Sprinklers-Automatic-Fire (Wholesale)(423850)	Fort Wayne	20 - 49	$10,000 - $19,999
Complete Drives Inc	Electric Equipment-Manufacturers(335999)	Fort Wayne	20 - 49	$2,500 - $4,999
Core-Tech Inc	Foundry Equipment & Supplies (Wholesale)(423830)	Fort Wayne	20 - 49	$10,000 - $19,999
Cornerstone Solutions	Business Management Consultants(541614)	Fort Wayne	20 - 49	$2,500 - $4,999
Creative Control Systems	Relays & Industrial Controls (Mfrs)(335314)	Fort Wayne	20 - 49	$5,000 - $9,999
Creative Image Resources	Signs (Manufacturers)(339950)	Fort Wayne	20 - 49	$2,500 - $4,999
Css Group Inc	Computers-System Designers & Consultants(541511)	Fort Wayne	50 - 99	$5,000 - $9,999
Cummins Mid States Power	Engines-Diesel (Wholesale)(423830)	Fort Wayne	20 - 49	$20,000 - $49,999
D & N Micro Products	Printed & Etched Circuits-Mfrs(334412)	Fort Wayne	20 - 49	$5,000 - $9,999
D R Management	Business Management Consultants(541614)	Fort Wayne	20 - 49	$2,500 - $4,999
Dreibelbiss Title CO	Title Companies(541191)	Fort Wayne	20 - 49	$2,500 - $4,999
Dulin Ward & Dewald Inc	Accountants(541211)	Fort Wayne	20 - 49	$2,500 - $4,999
Dupont Hospital	Hospitals(622110)	Fort Wayne	250 - 499	$20,000 - $49,999
Dupont Valley Times	Advertising-Newspaper(541810)	Fort Wayne	20 - 49	$2,500 - $4,999
Earth Source Inc	Landscape Designers(541320)	Fort Wayne	20 - 49	$1,000 - $2,499
Edglo Laboratories Inc	Environmental & Ecological Services(541710)	Fort Wayne	20 - 49	$2,500 - $4,999
Emergency & Critical Animal	Veterinarians(541940)	Fort Wayne	20 - 49	$1,000 - $2,499
Ernst & Young	Accountants(541211)	Fort Wayne	20 - 49	$2,500 - $4,999
Exterior Designing Inc	Landscape Designers(541320)	Hoagland	50 - 99	$5,000 - $9,999

Fire Protection Svc	Fire Protection Equipment & Supls (Whol)(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Fire Systems Inc	Fire Extinguishers (Wholesale)(423990)	Fort Wayne	20 - 49	$20,000 - $49,999
First Land Title CO	Title Companies(541191)	Fort Wayne	20 - 49	$1,000 - $2,499
Fort Wayne Wilbert Vault Inc	Burial Vaults (Wholesale)(423850)	Fort Wayne	20 - 49	$5,000 - $9,999
G T Automation Group	Electrical Discharge Machining (Whol)(423610)	Fort Wayne	20 - 49	$20,000 - $49,999
G W Berkheimer CO	Furnaces-Parts & Supplies (Wholesale)(423730)	Fort Wayne	20 - 49	$10,000 - $19,999
Gai Consultants	Engineers-Consulting(541330)	Fort Wayne	20 - 49	$2,500 - $4,999
Gasoline Equipment Svc CO	Service Station Equipment (Wholesale)(423120)	Fort Wayne	20 - 49	$50,000 - $99,999
Ge CO	Motor & Generator-Manufacturers(335312)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
General Dynamics C4 Systems	Computers-System Designers & Consultants(541511)	Fort Wayne	50 - 99	$10,000 - $19,999
Global Systems	Cad Systems & Services(541512)	Fort Wayne	20 - 49	$2,500 - $4,999
Haller & Colvin	Attorneys(541110)	Fort Wayne	20 - 49	$5,000 - $9,999
Havel Brothers	Controls Control Systs/Regulators (Whol)(423610)	Fort Wayne	20 - 49	$20,000 - $49,999
Home Guard Industries Inc	Manufacturers(339999)	Grabill	100 - 249	$10,000 - $19,999
Hunt Suedhoff Kalamaros	Attorneys(541110)	Fort Wayne	20 - 49	$5,000 - $9,999
Hupp Aerospace/Defense	Distribution Services(541870)	New Haven	20 - 49	$2,500 - $4,999
Icon Exhibits	Display Designers & Producers(541850)	Fort Wayne	20 - 49	$2,500 - $4,999
Ikon Office Solutions Inc	Copying & Duplicating Machines & Supls(423420)	Fort Wayne	20 - 49	$10,000 - $19,999
Indiana Fiber Recycling Inc	Recycling Centers (Wholesale)(423930)	Fort Wayne	20 - 49	$10,000 - $19,999
Industrial Composites Inc	Manufacturers(339999)	Fort Wayne	50 - 99	$5,000 - $9,999
Industrial Truck Sales & Svc	Material Handling Equipment (Wholesale)(423830)	Fort Wayne	20 - 49	$10,000 - $19,999
Integrated Logistics Solutions	Fasteners-Industrial (Wholesale)(423710)	Fort Wayne	20 - 49	$10,000 - $19,999
Irving Gravel	Sand & Gravel (Wholesale)(423320)	Fort Wayne	20 - 49	$10,000 - $19,999
Itt Industries Inc	Manufacturers(339999)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999

J & B Importers Midwest	Bicycles-Parts & Supplies-Wholesale(423910)	Fort Wayne	20 - 49	$10,000 - $19,999
K T Industries Inc	Cutting & Slitting Svc(541420)	Fort Wayne	50 - 99	$5,000 - $9,999
Kelly's Annealed Bait	Fishing Tackle-Manufacturers(339920)		20 - 49	$5,000 - $9,999
Koorsen Fire & Security	Fire Alarm Systems (Wholesale)(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Koorsen Protection Svc Inc	Burglar Alarm Systems (Wholesale)(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Krouse Kern & CO	Accountants(541211)	Fort Wayne	20 - 49	$2,500 - $4,999
Lee Supply Corp	Plumbing Fixtures & Supplies-Wholesale(423720)	Fort Wayne	20 - 49	$10,000 - $19,999
Life Touch	Photographers-Portrait(541921)	Fort Wayne	20 - 49	$1,000 - $2,499
Limelite Electric Arts CO	Signs (Manufacturers)(339950)	Huntertown	20 - 49	$2,500 - $4,999
Logikos Systems & Software	Data Systems Consultants & Designers(541511)	Fort Wayne	20 - 49	$5,000 - $9,999
Lutheran Children's Hospital	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Lutheran Hospital of Indiana	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Magtech Services Inc	Services Nec(541990)	Fort Wayne	20 - 49	N/A
Mail Connection Inc	Advertising-Direct Mail(541860)	Fort Wayne	20 - 49	$2,500 - $4,999
Marketing Diversified Svc	Marketing Programs & Services(541613)	Fort Wayne	20 - 49	$5,000 - $9,999
Marketing Impact Inc	Advertising-Agencies & Counselors(541810)	Fort Wayne	20 - 49	$5,000 - $9,999
Martin Riley Mock Architects	Architects(541310)	Fort Wayne	20 - 49	$2,500 - $4,999
Master Group	Engineers-Consulting(541330)	Fort Wayne	20 - 49	$5,000 - $9,999
Merz Plumbing Heating & A/C	Furnaces-Heating (Wholesale)(423730)	Leo	20 - 49	$10,000 - $19,999
Metropolitan Title CO	Title Companies(541191)	Fort Wayne	20 - 49	$2,500 - $4,999
Midwest Veterinary Supply	Veterinarians Equipment & Supls (Whol)(423850)	Fort Wayne	20 - 49	$10,000 - $19,999
Mill Supplies Inc	Industrial Equipment & Supplies (Whol)(423830)	Fort Wayne	20 - 49	$20,000 - $49,999
Miller Carson Boxberger Murphy	Attorneys(541110)	Fort Wayne	50 - 99	$5,000 - $9,999
Moake Park Group Inc	Architects(541310)	Fort Wayne	20 - 49	$2,500 - $4,999
Msktd & Assoc Inc	Architects(541310)	Fort Wayne	50 - 99	$10,000 - $19,999
Nob Sales Corp	Distribution Services(541870)	Fort Wayne	20 - 49	$1,000 - $2,499

Northern Apex Corp	Electronic Parts Assemblers (Wholesale)(423610)	Huntertown	20 - 49	$10,000 - $19,999
Office Concepts Inc	Copying & Duplicating Machines & Supls(423420)	Fort Wayne	20 - 49	$10,000 - $19,999
Old Fort Specialty Corp	Advertising-Specialties (Wholesale)(541890)	Fort Wayne	20 - 49	$10,000 - $19,999
Old Fort Supply CO Inc	Brick-Clay Common & Face (Wholesale)(423320)	Fort Wayne	20 - 49	$20,000 - $49,999
Omnisource Corp Dispatch	Scrap Metals & Iron (Wholesale)(423930)	Fort Wayne	20 - 49	$10,000 - $19,999
O'Neal Steel Inc	Steel-Distributors & Warehouses(423510)	New Haven	20 - 49	$20,000 - $49,999
Orthopaedic Hospital-Parkview	Hospitals(622110)	Fort Wayne	20 - 49	$2,500 - $4,999
Panoramic Corp	Dental Equipment-Manufacturers(339114)	Fort Wayne	20 - 49	N/A
Paragon Landscape Inc	Landscape Designers(541320)	Harlan	20 - 49	$2,500 - $4,999
Parkview Behavioral Health	Mental Health Services(622210)	Fort Wayne	250 - 499	$20,000 - $49,999
Parkview Health System	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Parkview North Hospital	Hospitals(622110)	Fort Wayne	100 - 249	$10,000 - $19,999
Patroit Engineering CO	Engineers-Consulting(541330)	Fort Wayne	20 - 49	$2,500 - $4,999
Perry Corp	Copying & Duplicating Machines & Supls(423420)	Fort Wayne	20 - 49	$5,000 - $9,999
Poly Mod Technologies Inc	Seals-O-Ring (Wholesale)(423710)	Fort Wayne	20 - 49	$10,000 - $19,999
Post Masters	Mailing & Shipping Services(541860)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Preferred Sourcing Inc	Inspection Service(541350)	Fort Wayne	20 - 49	$2,500 - $4,999
Press Seal Gasket	Gaskets-Packing & Sealing Devices (Mfrs)(339991)	Fort Wayne	50 - 99	$10,000 - $19,999
Productive Business Interiors	Office Furniture & Equip-Dealers (Whol)(423210)	Fort Wayne	20 - 49	$10,000 - $19,999
Pyromation Inc	Thermocouples (Manufacturers)(334512)	Fort Wayne	100 - 249	$10,000 - $19,999
Raytheon CO	Computers-Electronic-Manufacturers(334111)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Recovery Technologies	Recycling Centers (Wholesale)(423930)	Fort Wayne	20 - 49	$10,000 - $19,999
Rehabilitation Hosp-Ft Wayne	Hospitals(622110)	Fort Wayne	100 - 249	$10,000 - $19,999
Rothberg Logan & Warsco	Attorneys(541110)	Fort Wayne	50 - 99	$10,000 - $19,999

Schenkel Shultz	Architects(541310)	Fort Wayne	20 - 49	$2,500 - $4,999
Sco Engineering Inc	Surveyors-Land(541370)	Fort Wayne	20 - 49	$1,000 - $2,499
Shambaugh Kast Beck & Williams	Attorneys(541110)	Fort Wayne	20 - 49	$2,500 - $4,999
Snow & Sauerteig	Attorneys(541110)	Fort Wayne	20 - 49	$2,500 - $4,999
Specialized Printing Products	Mailing & Shipping Services(541860)	Fort Wayne	20 - 49	$2,500 - $4,999
St Joe Ctr Veterinary Hospital	Veterinarians(541940)	Fort Wayne	20 - 49	$2,500 - $4,999
St Joseph Hospital	Hospitals(622110)	Fort Wayne	500 - 999	$50,000 - $99,999
State Development Ctr	Hospitals(622110)	Fort Wayne	1,000 - 4,999	$100,000 - $499,999
Stoller Development	Furniture-Dealers-Wholesale(423210)	Fort Wayne	20 - 49	$10,000 - $19,999
Strahm Contract Interiors	Interior Decorators Design & Consultants(541410)	Fort Wayne	100 - 249	$10,000 - $19,999
Strataflo Products	Valves-Wholesale(423840)	Fort Wayne	20 - 49	$10,000 - $19,999
Stuart Manufacturing Inc	Noncurrent-Carrying Wiring Devices (Mfr)(335932)	Fort Wayne	50 - 99	$10,000 - $19,999
Sytran One Inc	Circuit Boards-Manufacturers(334412)	Fort Wayne	20 - 49	$2,500 - $4,999
Tec-Hackett Inc	Cylinders-Air & Hydraulic (Wholesale)(423840)	Fort Wayne	20 - 49	$20,000 - $49,999
Three Rivers Title CO	Title Companies(541191)	Fort Wayne	50 - 99	$5,000 - $9,999
Times Group-New Homes Magazine	Advertising-Magazine(541840)	Fort Wayne	20 - 49	$2,500 - $4,999
Tippman Industrial Inc	Sewing Machines-Manufacturers(335228)	Fort Wayne	20 - 49	$5,000 - $9,999
Title Express Inc	Title Companies(541191)	Fort Wayne	20 - 49	$1,000 - $2,499
Trinity Home Ctr	Lighting Fixtures-Wholesale(423610)	New Haven	20 - 49	$20,000 - $49,999
Tritech Manufacturing Inc	Printed & Etched Circuits-Mfrs(334412)	Fort Wayne	20 - 49	$2,500 - $4,999
United Ribtype CO	Marking Devices (Manufacturers)(339943)	Fort Wayne	20 - 49	$2,500 - $4,999
USA Player Sportswear Inc	Embroidery(541490)	Fort Wayne	20 - 49	$1,000 - $2,499
VA Northern Indian Health Care	Hospitals(622110)	Fort Wayne	250 - 499	$20,000 - $49,999
Van Ausdall & Farrar Inc	Dictating Machines & Supplies (Whol)(423420)	Fort Wayne	20 - 49	$5,000 - $9,999
Vee Engineering	Engineers(541330)	Fort Wayne	20 - 49	$2,500 - $4,999
Vita Nonwovens	Manufacturers(339999)	Fort Wayne	20 - 49	$2,500 - $4,999
Wabash Electric	Electric Equipment & Supplies-Wholesale(423610)	Fort Wayne	20 - 49	$10,000 - $19,999
Waste Management Inc	Consultants-Business Nec(541618)	Fort Wayne	50 - 99	$10,000 - $19,999

Wayne	Janitors Equipment/Supplies (Wholesale)(423850)	Fort Wayne	20 - 49	$10,000 - $19,999
Wayne Fasteners Inc	Fasteners-Industrial (Wholesale)(423710)	Fort Wayne	20 - 49	$10,000 - $19,999
Westwood Lumber Sales Inc	Lumber-Wholesale(423310)	New Haven	20 - 49	$20,000 - $49,999
White Electronic Designs Corp	Electronic Equipment & Supplies-Mfrs(334419)	Fort Wayne	50 - 99	$10,000 - $19,999
DEKALB COUNTY				
Auburn Concrete Products Inc	Concrete Products (Wholesale)(423320)	Auburn	20 - 49	$10,000 - $19,999
Bear Creek Rolling Rock	Sand & Gravel (Wholesale)(423320)	Auburn	20 - 49	$10,000 - $19,999
Country Stone	Concrete Blocks & Shapes (Wholesale)(423320)	Waterloo	20 - 49	$10,000 - $19,999
Custom Lights Inc	Coml Ind Instnl Elec Lighting (Mfrs)(335122)	Garrett	100 - 249	$20,000 - $49,999
DE Kalb Memorial Hospital Inc	Hospitals(622110)	Auburn	250 - 499	$20,000 - $49,999
Eaton Corp Clutch Div	Electric Equipment & Supplies-Wholesale(423610)	Auburn	500 - 999	$100,000 - $499,999
Griffith Rubber Mills Micro	Rubber Products-Wholesale(423840)	Garrett	20 - 49	$10,000 - $19,999
Hermac Inc	Wire Harnesses-Electrical (Wholesale)(423610)	Auburn	20 - 49	$20,000 - $49,999
Invisible Technologies Inc	Electronic Equipment & Supplies-Mfrs(334419)	Garrett	100 - 249	$20,000 - $49,999
Kitchen-Quip Inc	Die Castings (Wholesale)(423510)	Waterloo	20 - 49	$20,000 - $49,999
Kruse Auctioneers & Marketing	Auctioneers(541990)	Auburn	20 - 49	$1,000 - $2,499
Kruse International	Auctioneers(541990)	Auburn	20 - 49	$2,500 - $4,999
Northeastern Center	Mental Health Services(622210)	Auburn	20 - 49	$1,000 - $2,499
Rods Indiana Inc	Fasteners-Industrial (Wholesale)(423710)	Butler	20 - 49	$10,000 - $19,999
Stafford Gravel Inc	Sand & Gravel (Wholesale)(423320)	Butler	20 - 49	$10,000 - $19,999
Wilhelm Gravel CO	Sand & Gravel (Wholesale)(423320)	Waterloo	20 - 49	$10,000 - $19,999
GRANT COUNTY				
American Mobile Power	Hydraulic Equipment & Supplies (Whol)(423830)	Fairmount	20 - 49	$10,000 - $19,999
Auto Owners Inc	Insurance(524210)	Marion	50 - 99	$5,000 - $9,999
Boone Fire Equipment	Fire Protection Equipment & Supls (Whol)(423610)	Fairmount	20 - 49	$20,000 - $49,999
Butterworth Industries Inc	Manufacturers(339999)	Gas City	50 - 99	$5,000 - $9,999
Cornerstone Behavioral Health	Mental Health Services(622210)	Marion	100 - 249	$5,000 - $9,999

Family Service Society Inc	Mental Health Services(622210)	Marion	100 - 249	$5,000 - $9,999
Fastrack	Emergency Medical & Surgical Service(622110)	Marion	100 - 249	$10,000 - $19,999
Franklin Electric Gas City	Electric Motors-Distributors(423610)	Gas City	50 - 99	$50,000 - $99,999
H & R Block Tax Svc	Tax Return Preparation & Filing(541213)	Marion	20 - 49	$1 - $499
Harper Implement Inc	Farm Equipment (Wholesale)(423820)	Swayzee	20 - 49	$10,000 - $19,999
Marion General Hospital	Hospitals(622110)	Marion	1,000 - 4,999	$100,000 - $499,999
Mgh Cancer Ctr	Hospitals(622110)	Marion	20 - 49	$2,500 - $4,999
Midwest Warehouse Corp	Automobile Parts & Supplies-Wholesale(423120)	Marion	20 - 49	$5,000 - $9,999
North American Mfg	Manufacturers(339999)	Fairmount	20 - 49	$5,000 - $9,999
Tnt Fireworks	Fireworks (Wholesale)(423920)	Gas City	100 - 249	$50,000 - $99,999
Twoson Esp Inc	Wire Harnesses-Electrical (Wholesale)(423610)	Matthews	50 - 99	$20,000 - $49,999
US Veterans Medical Ctr	Hospitals(622110)	Marion	500 - 999	$50,000 - $99,999
Wiley Metal	Manufacturers-Agents & Representatives(423990)	Marion	100 - 249	$100,000 - $499,999
HUNTINGTON COUNTY				
Ambulance Service	Hospitals(622110)	Huntington	100 - 249	$10,000 - $19,999
American Speciality CO	Insurance(524210)	Roanoke	100 - 249	N/A
Bowen Center	Mental Health Services(622210)	Huntington	20 - 49	$1,000 - $2,499
Fort Wayne Fleet Equipment CO	Truck Bodies & Equipment (Wholesale)(423110)	Roanoke	20 - 49	$100,000 - $499,999
Huntington Electric Inc	Resistors (Manufacturers)(334415)	Huntington	50 - 99	$10,000 - $19,999
Parkview Huntington Hospital	Hospitals(622110)	Huntington	250 - 499	$20,000 - $49,999
Square D	Electric Equipment & Supplies-Wholesale(423610)	Huntington	250 - 499	$100,000 - $499,999
United Technologies Electronic	Electronic Equipment & Supplies-Mfrs(334419)	Huntington	500 - 999	$100,000 - $499,999
W & W Gravel CO	Sand & Gravel (Wholesale)(423320)	Roanoke	20 - 49	$5,000 - $9,999
Wabash Technologies	Electronic Equipment & Supplies-Mfrs(334419)	Huntington	500 - 999	N/A
LAGRANGE COUNTY				

American Reliance Industries	Manufacturers(339999)	Shipshewana	20 - 49	$2,500 - $4,999
Deflecta-Shield Aluminum Prod	Automobile Dismantling/Recycling (Whol)(423140)	Howe	50 - 99	N/A
Doubletree Rv Llc	Mobile Homes-Distributors(423390)	Howe	100 - 249	$20,000 - $49,999
Dutchcraft	Van & Truck Conversions & Accessories(423120)	Lagrange	5 - 9	$500 - $999
Electric Cord Sets Inc	Electrical Indstrl Apparatus Nec (Mfrs)(335999)	Wolcottville	20 - 49	$2,500 - $4,999
Engineered Interiors	Van & Truck Conversions & Accessories(423120)	Shipshewana	1 - 4	$1 - $499
Fortune Homes	Mobile Homes-Distributors(423390)	Lagrange	100 - 249	$20,000 - $49,999
L A West Inc	Van & Truck Conversions & Accessories(423120)	Lagrange	20 - 49	$5,000 - $9,999
LA Grange Community Hospital	Hospitals(622110)	Lagrange	100 - 249	$10,000 - $19,999
Ohio Table Pad CO	Table Pads (Wholesale)(423220)	Lagrange	20 - 49	$10,000 - $19,999
Pent Assemblies Rome City	Electric Supplies-Manufacturers(335312)	Wolcottville	50 - 99	$10,000 - $19,999
Tite-Lok	Electronic Equipment & Supplies-Mfrs(334419)	Topeka	20 - 49	$5,000 - $9,999
NOBLE COUNTY				
Brc Rubber & Plastics Inc	Gaskets-Packing & Sealing Devices (Mfrs)(339991)	Ligonier	100 - 249	$20,000 - $49,999
Community Hospital of Noble	Hospitals(622110)	Kendallville	100 - 249	$10,000 - $19,999
D A Brown Engineer Consultants	Engineers-Professional(541330)	Kendallville	20 - 49	$2,500 - $4,999
Dana Corp	Gaskets (Wholesale)(423840)	Albion	100 - 249	$50,000 - $99,999
Emergency Radio Svc	Radio Communication Equip & Systems-Whol(423690)	Ligonier	50 - 99	$50,000 - $99,999
Freudenberg-Nok General	Hydrometers (Manufacturers)(334519)	Ligonier	100 - 249	$20,000 - $49,999
H & R Block Tax Svc	Tax Return Preparation & Filing(541213)	Kendallville	20 - 49	$1 - $499
Industrial Finishing Svc	Industrial Equipment & Supplies (Whol)(423830)	Kendallville	20 - 49	$10,000 - $19,999
International Wire	Wire (Wholesale)(423510)	Avilla	100 - 249	$50,000 - $99,999
LA Otto Mfg	Electronic Equipment & Supplies-Mfrs(334419)	Laotto	50 - 99	$10,000 - $19,999

Laketronics Inc	Wire Harnesses-Electrical-Manufacturers(335929)	Cromwell	20 - 49	$5,000 - $9,999
Lyall Technologies	Current-Carrying Wiring Devices (Mfrs)(335931)	Albion	20 - 49	$2,500 - $4,999
Northeastern Center	Mental Health Services(622210)	Kendallville	50 - 99	$2,500 - $4,999
Northeastern Center	Mental Health Services(622210)	Kendallville	20 - 49	$2,500 - $4,999
Parkview Noble Hospital	Hospitals(622110)	Kendallville	250 - 499	$20,000 - $49,999
Pent Assemblies Avilla	Manufacturers-Agents & Representatives(423990)	Avilla	50 - 99	$20,000 - $49,999
SC Tower Structural Laminating	Laminated Structural Products (Whol)(423510)	Ligonier	20 - 49	N/A
Sroufe Healthcare Products Inc	Orthopedic Prosthetic/Srgcl Appl (Mfrs)(339113)	Ligonier	50 - 99	$10,000 - $19,999
Teleflex Automotive	Automobile Parts & Supplies-Wholesale(423120)	Kendallville	100 - 249	$100,000 - $499,999
Ultrexx Inc	Surgical/Med Instruments/Apparatus (Mfr)(339112)	Avilla	100 - 249	$20,000 - $49,999
Union Products Intl	Electric Equipment-Manufacturers(335999)	Cromwell	20 - 49	$5,000 - $9,999
Whiteshire/Hamroc	Agricultural Marketing(541690)	Albion	20 - 49	$2,500 - $4,999
STEUBEN COUNTY				
A W Manufacturing	Manufacturers(339999)	Angola	20 - 49	$500 - $999
Cameron Memorial Hospital	Hospitals(622110)	Angola	100 - 249	$10,000 - $19,999
Cameron Woods	Hospitals(622110)	Angola	100 - 249	$10,000 - $19,999
Cold Heading	Manufacturers(339999)	Fremont	20 - 49	$5,000 - $9,999
Cold Heading CO	Bolts & Nuts (Wholesale)(423710)	Fremont	50 - 99	$20,000 - $49,999
Ctn Data Svc Inc	Computers-System Designers & Consultants(541511)	Hamilton	20 - 49	$2,500 - $4,999
Emf Corp	Current-Carrying Wiring Devices (Mfrs)(335931)	Angola	100 - 249	$20,000 - $49,999
Friskney Equipment CO	Material Handling Equipment (Wholesale)(423830)	Angola	20 - 49	$10,000 - $19,999
Health Equipment Mfg	Physicians & Surgeons Equip & Supls-Mfrs(339112)	Fremont	20 - 49	$5,000 - $9,999
Indiana Wire Assemblies	Electronic Equipment & Supplies-Mfrs(334419)	Hamilton	20 - 49	$2,500 - $4,999
LA Grange Products Inc	Tanks-Metal (Wholesale)(423860)	Fremont	50 - 99	$50,000 - $99,999

Northeastern Center	Mental Health Services(622210)	Angola	20 - 49	$1,000 - $2,499
Q C Onics Mfg	Electronic Equipment & Supplies-Mfrs(334419)	Angola	20 - 49	$5,000 - $9,999
Rees Inc	Electrical Indstrl Apparatus Nec (Mfrs)(335999)	Fremont	20 - 49	$5,000 - $9,999
Salga Inc	Moldings (Wholesale)(423310)	Fremont	100 - 249	$50,000 - $99,999
Shelton Fireworks	Fireworks (Wholesale)(423920)	Fremont	20 - 49	$10,000 - $19,999
Superior Canopy Corp	Service Station Equipment (Wholesale)(423120)	Hamilton	20 - 49	$50,000 - $99,999
Swager Communications	Radio/Tv Broadcasting/Comm Equip (Mfrs)(334220)	Fremont	20 - 49	$10,000 - $19,999
Western Consolidated Tchnlgs	Gaskets-Packing & Sealing Devices (Mfrs)(339991)	Fremont	20 - 49	$5,000 - $9,999
WABASH COUNTY				
Agro-Chem	Farm Equipment (Wholesale)(423820)	Wabash	20 - 49	$5,000 - $9,999
Alumitech of Wabash Inc	Aluminum (Wholesale)(423510)	Wabash	50 - 99	$50,000 - $99,999
Beauchamp & Mc Spadden	Insurance(524210)	Wabash	20 - 49	$2,500 - $4,999
Bulldog Battery Corp	Primary Batteries-Dry & Wet (Mfrs)(335912)	Wabash	50 - 99	$20,000 - $49,999
Custom Magnetics Inc	Electronic Coil & Transformers (Mfrs)(334416)	North Manchester	50 - 99	$5,000 - $9,999
Escalade Inc	Sporting & Athletic Goods Nec (Mfrs)(339920)	Wabash	250 - 499	N/A
G & S Holdings	Recycling Centers (Wholesale)(423930)	Wabash	50 - 99	$20,000 - $49,999
G & S Metal Consultants Inc	Aluminum (Wholesale)(423510)	Wabash	100 - 249	$100,000 - $499,999
Grain Systems Inc	Grain Elevators-Equip & Supplies (Whol)(423820)	Wabash	100 - 249	$50,000 - $99,999
Invensys	Electric Equipment & Supplies-Wholesale(423610)	North Manchester	100 - 249	$100,000 - $499,999
Wabash County Hospital	Hospitals(622110)	Wabash	250 - 499	$20,000 - $49,999
Wabash Electric Supply	Electric Equipment & Supplies-Wholesale(423610)	Wabash	50 - 99	$10,000 - $19,999
Wabash Magnetics Inc	Electric Equipment & Supplies-Wholesale(423610)	Wabash	100 - 249	N/A
Wabash Mpi-Carver Inc	Hydraulic Equipment & Supplies (Whol)(423830)	Wabash	50 - 99	$10,000 - $19,999

WELLS COUNTY				
Bluffton Regional Medical Ctr	Hospitals(622110)	Bluffton	100 - 249	$10,000 - $19,999
Franklin Electric CO Inc	Electric Motors-Manufacturers(335312)	Bluffton	500 - 999	N/A
General Manufacturing Inc	Lighting Fixtures-Manufacturers(335121)	Bluffton	20 - 49	$5,000 - $9,999
Johnson Controls Inc	Controls Control Systems/Regulators-Mfrs(334512)	Ossian	250 - 499	$20,000 - $49,999
Nesco Sales & Rentals	Contractors-Equip/Supls-Dlrs/Svc (Whol)(423810)	Bluffton	20 - 49	$20,000 - $49,999
Star Engineering & Machine CO	Machine Tools-Designers & Consultants(541330)	Bluffton	20 - 49	$5,000 - $9,999
Troxel Equipment	Farm Equipment (Wholesale)(423820)	Bluffton	20 - 49	$10,000 - $19,999
Wabash Electric Supply Inc	Electric Supplies-Manufacturers(335312)	Bluffton	20 - 49	$2,500 - $4,999
Wells County Ems Inc	Emergency Medical & Surgical Service(622110)	Bluffton	100 - 249	$10,000 - $19,999
WHITLEY COUNTY				
Bagan Outdoor Displays	Advertising-Outdoor(541850)	Columbia City	50 - 99	$10,000 - $19,999
C & A Tool Engineering Inc	Tool Designers(541420)	Churubusco	250 - 499	$20,000 - $49,999
Fox Products Corp	Musical Instruments-Manufacturers(339992)	South Whitley	100 - 249	$20,000 - $49,999
J & K Communications Inc	Radio Communication Equip & Systems-Whol(423690)	Columbia City	20 - 49	$20,000 - $49,999
Johnson Brothers Sign CO Inc	Signs (Manufacturers)(339950)	South Whitley	20 - 49	$2,500 - $4,999
Larwill Products	Electronic Equipment & Supplies-Mfrs(334419)	Larwill	50 - 99	$10,000 - $19,999
Parkview Memorial Hospital	Hospitals(622110)	Columbia City	100 - 249	$10,000 - $19,999
Precimed Inc	Physicians & Surgeons Equip & Supls-Whol(423450)	Columbia City	20 - 49	$20,000 - $49,999
Towerview Industries	Assembly & Fabricating Service(339999)	Columbia City	20 - 49	$5,000 - $9,999
Warner Electric	Electronic Coil & Transformers (Mfrs)(334416)	Columbia City	100 - 249	$10,000 - $19,999

11.9.2. Worksheet methodology

All information about the methodology in assembling the Supply, Demand and Net Demand worksheets is contained in Section 7.3.2.

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Demand Side Worksheet

EGR Name:	EGR3
Occupation Name:	REGISTERED NURSES
Occupation SOC:	29-1111

1. Estimated Job vacancies, end of 2005

Lower estimate	160
Middle estimate	220
Upper estimate	260

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	163	164	164	164	165	166	166
Ambulatory Health Care	33	34	34	34	34	34	34
Hospitals	94	94	94	94	95	95	95
Nursing and Residential Care Facili	17	17	17	17	17	17	18
Remainder (Gov, Educ, Ins,)	19	19	19	19	19	19	19
B. Middle projection:							
Total, all industries in EGR	386	391	397	403	409	415	421
Ambulatory Health Care	82	84	85	87	88	90	91
Hospitals	219	221	224	227	230	233	236
Nursing and Residential Care Facili	40	41	41	42	43	44	44
Remainder (Gov, Educ, Ins,)	45	45	46	47	48	49	49
C. Upper projection:							
Total, all industries in EGR	487	499	511	524	536	550	563
Ambulatory Health Care	108	112	115	118	122	125	129
Hospitals	275	281	287	294	300	307	313
Nursing and Residential Care Facili	47	49	50	51	53	54	55
Remainder (Gov, Educ, Ins,)	56	57	58	61	61	65	65

Notes: See worksheet "RN proj.xls for assumptions

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty.
The meanings of the words "Lower," "Middle," and "Upper" are as follows:
A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.
B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.
C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR3
Occupation Name:	REGISTERED NURSES
Occupation SOC:	29-1111

Projected "production" of new entrants into this occupation, by year

Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
IPFW (AS & BS)	130	130	130	130	130	130	130
USF (AS & BS)	90	90	90	90	90	90	90
IVY TECH NE	61	61	61	61	61	61	61
INDIANA WESLEYAN-MARION-BS	48	40	48	56	56	56	56
Huntington College-new progra	0	25	30	30	35	35	35
IVY TECH (Marion) A.S. Nursing	20	20	20	20	20	20	20
Ball State, PurdueWL , Indiana State							
c. Total new supply	**349**	**366**	**379**	**387**	**392**	**392**	**392**

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR3
Occupation Name:	REGISTERED NURSES *****HAV E NO REASON TO DEAL WITH OTHER THEN NET MIGRATION****
Occupation SOC:	29111104130

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	projected out migration is based on total migration calculations						
b. From other occupations							
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	11	11	13	13	13	19	19
b. Into other occupations							
3. Net IN-Migration	**-11**	**-11**	**-13**	**-13**	**-13**	**-19**	**-19**

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR 3
Occupation Name:	REGISTERED NURSES
Occupation SOC:	29-1111

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		160	-15	-206	-408	-618	-832	-1039
New demand during year		163	164	164	164	165	166	166
New production during year		349	366	379	387	392	392	392
Net migration during year		-11	-11	-13	-13	-13	-19	-19
Net change during year		-175	-191	-202	-210	-214	-207	-207
Carryover to next year (+/-)	160	-15	-206	-408	-618	-832	-1039	-1246

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		220	268	304	335	364	394	436
New demand during year		386	391	397	403	409	415	421
New production during year		349	366	379	387	392	392	392
Net migration during year		-11	-11	-13	-13	-13	-19	-19
Net change during year		48	36	31	29	30	42	48
Carryover to next year (+/-)	220	268	304	335	364	394	436	484

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		260	409	553	698	848	1005	1182
New demand during year		487	499	511	524	536	550	563
New production during year		349	366	379	387	392	392	392
Net migration during year		-11	-11	-13	-13	-13	-19	-19
Net change during year		149	144	145	150	157	177	190
Carryover to next year (+/-)	260	409	553	698	848	1005	1182	1372

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name: EGR3
Occupation Name: CNC-MIMM
Occupation SOC: hybrid of 51-4011, 51-4041, 49-9043

1. Estimated Job vacancies, end of 2005

Lower estimate	100
Middle estimate	200
Upper estimate	300

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	150	150	150	150	150	150	150
RUBBER & PLASTICS MANF (326)	23	23	23	23	23	23	23
PRI METAL MANF (331)	19	19	19	19	19	19	19
FAB METAL MANF (332)	47	47	47	47	47	47	47
MACHINERY MANF (333)	29	29	29	29	29	29	29
TRANS EQUIP MANF (336)	33	33	33	33	33	33	33
B. Middle projection:							
Total, all industries in EGR	212	212	212	212	212	212	212
RUBBER & PLASTICS MANF (326)	32	32	32	32	32	32	32
PRI METAL MANF (331)	27	27	27	27	27	27	27
FAB METAL MANF (332)	66	66	66	66	66	66	66
MACHINERY MANF (333)	40	40	40	40	40	40	40
TRANS EQUIP MANF (336)	46	46	46	46	46	46	46
C. Upper projection:							
Total, all industries in EGR	212	212	220	230	230	250	250
RUBBER & PLASTICS MANF (326)	32	32	33	35	35	38	38
PRI METAL MANF (331)	27	27	28	29	29	32	32
FAB METAL MANF (332)	66	66	69	72	72	78	78
MACHINERY MANF (333)	40	40	42	44	44	48	48
TRANS EQUIP MANF (336)	46	46	48	50	50	54	54

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty.
The meanings of the words "Lower," "Middle," and "Upper" are as follows:
A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.
B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.
C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR3
Occupation Name:	CNC-MIMM
Occupation SOC:	hybrid of 51-4011, 51-4041, 49-9043, 49-9041, 49-9042

Projected "production" of new entrants into this occupation, by year

Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
IVY TECH NE-ASSC DEGREE	20	25	30	30	30	30	30
*ANTHIS CAREER CENTER	10	10	10	10	10	10	10
VANTAGE VOCATIONAL (VanW	5	5	5	5	5	5	5
*FREEDOM ACADEMY (Noble Cou	0	15	20	24	30	30	30
b. Other sources of entrants (other than in-migration)							
IVY TECH MUNCIE (Marion)	12	12	12	12	12	12	12
*IVY TECH NE-cert (JOBWORK	36	36	36	36	36	36	36
*in house training to accompnay ANTHIS, FREEDOM, and cert programs							
c. Total new supply	**83**	**103**	**113**	**117**	**123**	**123**	**123**

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR3
Occupation Name:	CNC-MIMM
Occupation SOC:	hybrid of 51-4011, 51-4041, 49-9043, 49-9041, 49-9042

Year	2006	2007	2008	2009	2010	2011	2012
****MIGRATION IS CALCULATED ONLY ON A NET BASIS							
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR							
b. From other occupations							
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	26	26	24	22	20	18	16
b. Into other occupations							
3. Net IN-Migration	**-26**	**-26**	**-24**	**-22**	**-20**	**-18**	**-16**

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	**EGR-3**
Occupation Name:	**CNC-MIMM**
Occupation SOC:	hybrid of 51-4011, 51-4041, 49-9043, 49-9041, 49-9042

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		100	193	266	327	382	429	474
New demand during year		150	150	150	150	150	150	150
New production during year		83	103	113	117	123	123	123
Net migration during year		-26	-26	-24	-22	-20	-18	-16
Net change during year		93	73	61	55	47	45	43
Carryover to next year (+/-)	100	193	266	327	382	429	474	517

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		200	355	490	613	730	839	946
New demand during year		212	212	212	212	212	212	212
New production during year		83	103	113	117	123	123	123
Net migration during year		-26	-26	-24	-22	-20	-18	-16
Net change during year		155	135	123	117	109	107	105
Carryover to next year (+/-)	200	355	490	613	730	839	946	1051

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		300	455	590	721	856	983	1,128
New demand during year		212	212	220	230	230	250	250
New production during year		83	103	113	117	123	123	123
Net migration during year		-26	-26	-24	-22	-20	-18	-16
Net change during year		155	135	131	135	127	145	143
Carryover to next year (+/-)	300	455	590	721	856	983	1,128	1,271

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR 3
Occupation Name:	Industrial Engineers
Occupation SOC:	17-2112

1. Estimated Job vacancies, end of 2005

Lower estimate	75
Middle estimate	110
Upper estimate	185

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	14	14	14	14	14	14	14
Trans. Equipment Manf.	5	5	5	5	5	5	5
Computer and Electronic Pro.	1	1	1	0	0	0	0
Plastics & Rubber Products	2	2	2	3	4	4	4
B. Middle projection:							
Total, all industries in EGR	28	30	30	31	33	33	35
Trans. Equipment Manf.	10	11	11	11	12	12	12
Computer and Electronic Pro.	3	3	3	2	2	1	1
Plastics & Rubber Products	3	3	3	4	4	4	4
C. Upper projection:							
Total, all industries in EGR	38	40	42	42	44	44	44
Trans. Equipment Manf.	14	15	16	16	16	16	16
Computer and Electronic Pro.	4	4	4	3	3	3	3
Plastics & Rubber Products	3	3	3	4	5	5	5

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty.
The meanings of the words "Lower," "Middle," and "Upper" are as follows:
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Supply Side Worksheet #1 ("Production")

EGR Name:	EGR 3
Occupation Name:	Industrial Engineers
Occupation SOC:	17-2112

Projected "production" of new entrants into this occupation, by year

Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Purdue University - W. Laf.	25	25	25	25	26	26	26
Indiana Institute of Tech.	14	14	14	14	14	14	14
All other grad. & undergrad engineering programs in IN	75	75	75	75	75	75	75
b. Other sources of entrants (other than in-migration)							
non-Indiana schools	5	5	5	5	5	5	5
Source #2							
etc. (add as necessary)							
c. Total new supply	**119**	**119**	**119**	**119**	**120**	**120**	**120**

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR 3
Occupation Name:	Indutrial Engineers
Occupation SOC:	17-2112

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR							
b. From other occupations							
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	40	40	40	50	60	75	80
b. Into other occupations							
3. Net IN-Migration	**-40**	**-40**	**-40**	**-50**	**-60**	**-75**	**-80**

EGR Name:	EGR 3							
Occupation Name:	Industrial Engineers							
Occupation SOC:	17-2112							
A. Lower projection:								
Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		75	10	-55	-120	-175	-221	-252
New demand during year		14	14	14	14	14	14	14
New production during year		119	119	119	119	120	120	120
Net migration during year		-40	-40	-40	-50	-60	-75	-80
Net change during year		-65	-65	-65	-55	-46	-31	-26
Carryover to next year (+/-)	75	10	-55	-120	-175	-221	-252	-278
B. Middle projection:								
Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		110	59	10	-39	-77	-104	-116
New demand during year		28	30	30	31	33	33	35
New production during year		119	119	119	119	120	120	120
Net migration during year		-40	-40	-40	-50	-60	-75	-80
Net change during year		-51	-49	-49	-38	-27	-12	-5
Carryover to next year (+/-)	110	59	10	-39	-77	-104	-116	-121
C. Upper projection:								
Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		185	144	105	68	41	25	24
New demand during year		38	40	42	42	44	44	44
New production during year		119	119	119	119	120	120	120
Net migration during year		-40	-40	-40	-50	-60	-75	-80
Net change during year		-41	-39	-37	-27	-16	-1	4
Carryover to next year (+/-)	185	144	105	68	41	25	24	28

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

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C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR 3
Occupation Name:	Computer Systems Analysts
Occupation SOC:	15-1051

1. Estimated Job vacancies, end of 2005

Lower estimate	43
Middle estimate	47
Upper estimate	64

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	26	26	28	28	30	32	36
Merchant Wholesalers, Durable	7	7	8	8	8	8	10
Insurance Carriers	3	3	3	3	3	3	3
Hospitals	3	3	3	3	3	3	4
Computer & Electronic Mfg.	3	3	3	3	3	3	4
B. Middle projection:							
Total, all industries in EGR	48	50	50	50	52	52	55
Merchant Wholesalers, Durable	13	14	14	14	14	14	15
Insurance Carriers	5	5	5	5	6	6	6
Hospitals	5	5	5	5	5	6	6
Computer & Electronic Mfg.	5	5	5	5	5	6	6
C. Upper projection:							
Total, all industries in EGR	55	57	59	61	63	65	65
Merchant Wholesalers, Durable	15	15	16	16	17	18	18
Insurance Carriers	6	6	6	7	7	7	7
Hospitals	6	6	6	6	7	7	7
Computer & Electronic Mfg.	6	5	5	5	5	6	6

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty.
The meanings of the words "Lower," "Middle," and "Upper" are as follows:
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B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.
C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR 3
Occupation Name:	Computer Systems Analysts
Occupation SOC:	15-1051

Projected "production" of new entrants into this occupation, by year

Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Huntington University	2	2	2	2	2	2	2
IN Institute of Technology	14	14	14	14	14	14	14
IPFW	7	7	8	8	8	8	8
Tri-State	2	2	2	2	2	2	2
Taylor	11	11	11	11	11	11	11
BSU/IU/Purdue	8	8	8	8	8	8	8
b. Other sources of entrants (other than in-migration)							
Associate Degrees	5	5	5	5	5	5	5
Masters Degrees	2	2	2	2	2	2	2
In-House Training	5	5	5	5	5	5	5
c. Total new supply	**56**	**56**	**57**	**57**	**57**	**57**	**57**

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR 3
Occupation Name:	Computer Systems Analysts
Occupation SOC:	15-1051

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR							
b. From other occupations							
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	10	10	7	6	0	0	0
b. Into other occupations							
3. Net IN-Migration	**-10**	**-10**	**-7**	**-6**	**0**	**0**	**0**

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR-3
Occupation Name:	Cmputer Systems Analysts
Occupation SOC:	15-1051

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		43	23	3	-19	-42	-69	-94
New demand during year		26	26	28	28	30	32	36
New production during year		56	56	57	57	57	57	57
Net migration during year		-10	-10	-7	-6	0	0	0
Net change during year		-20	-20	-22	-23	-27	-25	-21
Carryover to next year (+/-)	43	23	3	-19	-42	-69	-94	-115

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		47	49	53	53	52	47	42
New demand during year		48	50	50	50	52	52	55
New production during year		56	56	57	57	57	57	57
Net migration during year		-10	-10	-7	-6	0	0	0
Net change during year		2	4	0	-1	-5	-5	-2
Carryover to next year (+/-)	47	49	53	53	52	47	42	40

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		64	73	84	93	103	109	117
New demand during year		55	57	59	61	63	65	65
New production during year		56	56	57	57	57	57	57
Net migration during year		-10	-10	-7	-6	0	0	0
Net change during year		9	11	9	10	6	8	8
Carryover to next year (+/-)	64	73	84	93	103	109	117	125

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

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